

Bronze Age Economics

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Timothy Earle

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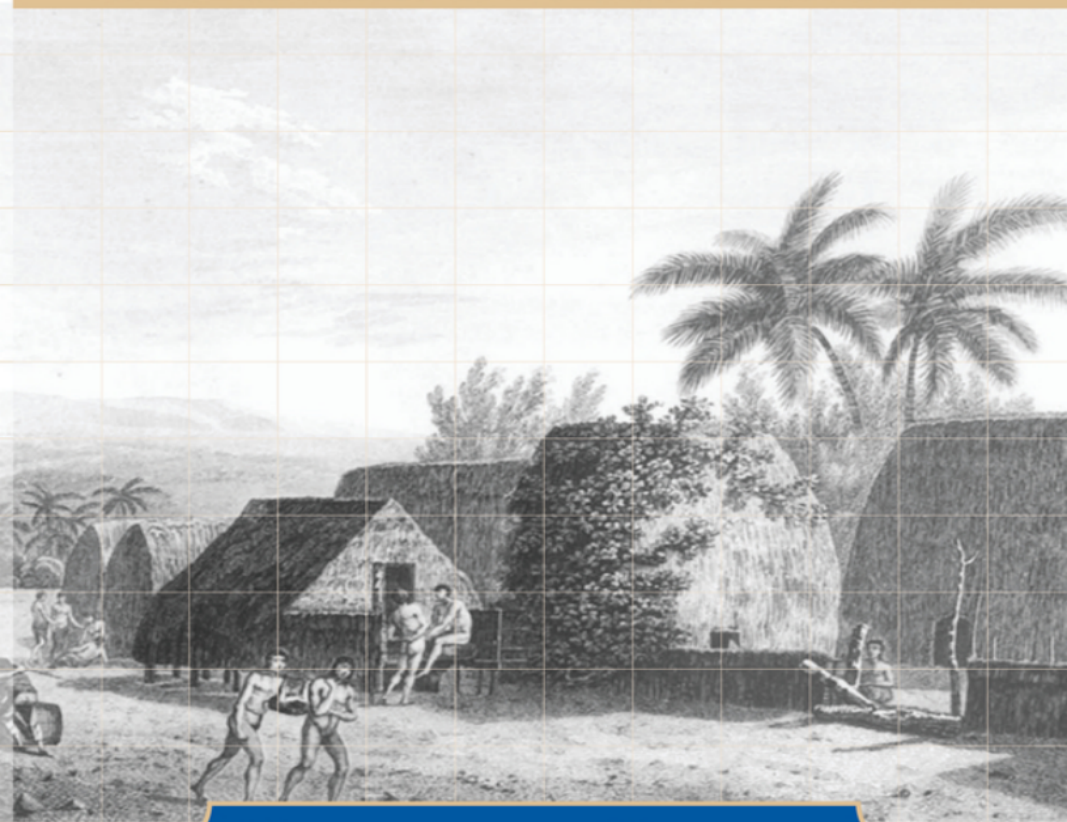
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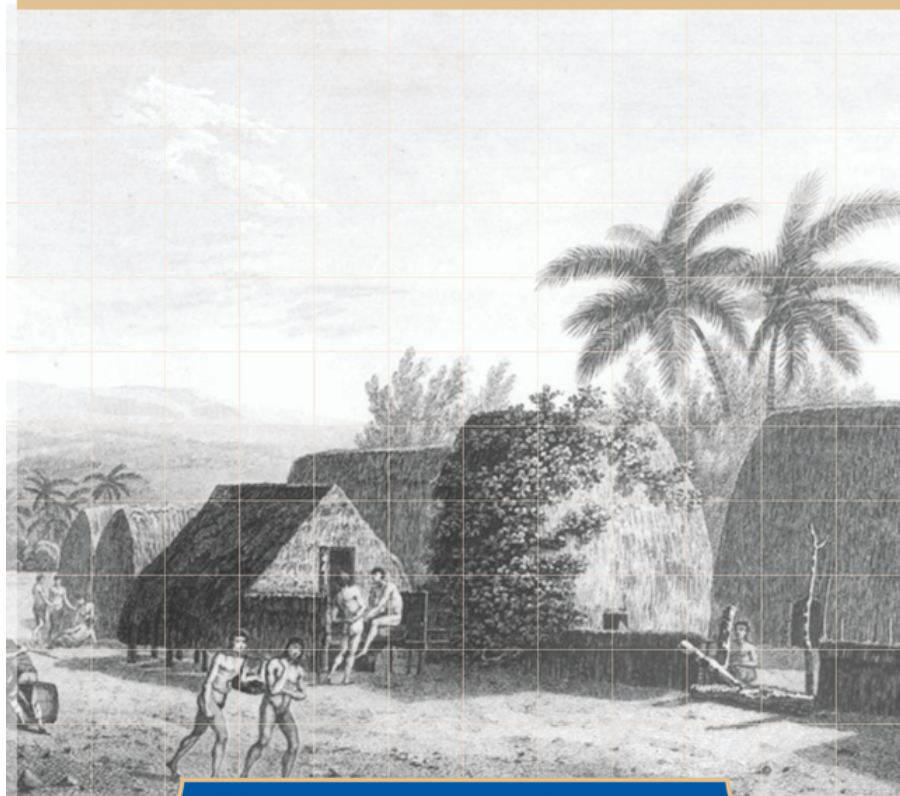
THE BEGINNINGS OF POLITICAL ECONOMIES



TIMOTHY EARLE

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The Beginnings of Political Economies

Timothy Earle
Northwestern University

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Contents

Preface

- 1 Political Economies of Chiefdoms and Agrarian States
- 2 The Ecology and Politics of Primitive Valuables
- 3 Chiefdoms in Archaeological and Ethnohistorical Perspectives

Part One: Hawaiian Chiefdoms

- 4 A Reappraisal of Redistribution: Complex Hawaiian Chiefdoms
- 5 Prehistoric Irrigation in the Hawaiian Islands: An Evaluation of Evolutionary Significance
- 6 Specialization and the Production of Wealth: Hawaiian Chiefdoms and the Inka Empire
- 7 Style and Iconography as Legitimation in Complex Chiefdoms

Part Two: Andean Chiefdoms and the Inka Empire

- 8 Staple Finance, Wealth Finance, and Storage in the Inka Political Economy
- 9 Wealth Finance in the Inka Empire: Evidence from the Calchaquí Valley, Argentina
- 10 Exchange and Social Stratification in the Andes
- 11 Status Distinction and Legitimation of Power as Reflected in Changing Patterns of Consumption in Late Prehispanic Peru

Part Three: Chiefdoms of Denmark

- 12 The Bronze Age Economy of Thy: Finance in a Networked Chiefdom
- 13 Property Rights and the Evolution of Chiefdoms
- 14 Ideology, Materialization, and Power Strategies

Notes

References

Index

Preface

The chapters of *Bronze Age Economics* were written across my career, starting with works of a young and idealistic Assistant Professor at UCLA and finishing up with the more senior thoughts of a Full Professor at Northwestern University. The book represents both my personal journey and my growing synthesis of how political economies emerged in human societies. These economies were embedded in the hierarchy of chiefdoms, intermediate-level societies that emerged from Neolithic villages to form the regional polities that prefigured states. I am a social evolutionist. I believe that human societies have changed fundamentally and that a central goal of anthropology is to understand these evolutionary changes. The chapters that follow document at least in outline how the intensification and control of human economies were basic to the evolutionary process.

The social world of academics surely affects our intellectual histories. To understand the goals and the methods found in this book is to understand the anthropology faculty and students with whom I have come of age: as an undergraduate at Harvard University, 1965-1969; as a graduate student at the University of Michigan, 1969-1973; and as a professor at UCLA, 1973-1995, and at Northwestern University, 1995 to the present. Harvard in the late 1960s was a place of revolutionary thought. As our contemporaries fought, killed, and died in Vietnam, we talked about a new world improved by progressive action. Academically, I was perhaps most influenced by two young Assistant Professors, James Deetz and Tom Patterson, both just passing through for important future careers, and two established senior scholars, V. Gordon Willey and Ernst Mayr. Jim Deetz's introductory class (later published as *An Invitation to Archaeology*) seduced me into anthropology, away from an intention to study evolutionary biology. The strongly empirical, analytic, and functional approaches of Harvard's ethnographers (David Maybury-Lewis, Evon Vogt, John Whiting, and the visitor Roger Keesing) appealed to me; the archaeology was unexciting.

But with statements like, "although I don't believe in it, you should find out for yourself about the New Archaeology," Steven Williams sent me to the archaeological field program at Vernon, Arizona (supported by NSF undergraduate training funds), whose participants were to become a Who's Who of the New Archaeology. With a background in science, I was not particularly impressed by the hyperscientist talk, and at one meeting when we were asked what our summer's hypotheses were, I remember replying glibly that I collected hypotheses along with my butterflies. Ah, youth! I was still an

eager convert to their brand of cultural ecology, although already showing signs of the "critical graduate student" captured by Kent Flannery's composite description of my later fellow graduate students at Michigan. Upon returning to Harvard, I signed up to work in Peru with Tom Patterson, then a nondoctrinaire processualist.

I went to the University of Michigan in 1969. I was a registered conscientious objector, 4-F, and out of Vietnam; I married my Eliza that summer, spent the field season again at Vernon, and moved to Ann Arbor. There the strongly evolutionary and ecological orientation of the cultural anthropologists was most attractive: Roy Rappaport, Marshall Sahlins, recently retired Leslie White, Eric Wolf, and Arum Yengoyan—the dream team. Marshall Sahlins's economic anthropology, to become *Stone Age Economics*, blew me away. Marshall would stride up and down in front of the class, smoking a small cigar, talking antiwar and social justice, and crafting incredible images of traditional societies. This was a period of transition for him, turning 40 and questioning the evolutionary thought of his youth. Because of my interest in irrigation agriculture, he recruited me to work on his Hawaiian history project, but ultimately my strong commitment to his former evolutionism was too much. I was orphaned when he moved to the University of Chicago. For once the archaeologists (especially Kent Flannery, Richard Ford, Jeffrey Parsons, and Henry Wright) excited me. I remember taking but a single archaeology course: Flannery's seminar that was to be the basis for *The Early Mesoamerican Village*. Fusing idealism and skepticism, Wright and Flannery's analyses of cultural evolution guided my dissertation on the Hawaiian political economy.

Much later when I read the post-processualist critiques of the 1980s, I was confused. I and my fellow students, who included Liz Brumfiel, Dick Drennan, Ellen Messer, Steven Plog, and Martin Wobst, were certainly the second generation of processual archaeologists, but what we were thinking about did not fit the stereotypes that Ian Hodder was fashioning. Who were these hyperscientific functionalists? Of course we knew them, but they were exactly those whom we most criticized and wished to rise above. My experience with processualists was very different from Hodder's stereotype. The professors and students at Michigan in the early 1970s were interested in a historical science of human societies. Our research centered on social and political organization and how it evolved. We were creating what Colin Renfrew was to label social archaeology. My dissertation, as partly summarized in [Chapters 4 and 5](#), disapproved of functionalist and ecological theories like those of Elmer Service or Karl Wittfogel. As seen in the present collection, my interests quickly came to focus on the political process of emergent complexity, a theme that has dominated my career.

In 1973, I was hired as an Assistant Professor by the University of California, Los Angeles. They were looking for someone to replace Fred Plog, to bridge cultural anthropology and archaeology. Michael Schiffer, a friend from Vernon, told me about the job; he had been a candidate, but his job talk filled with new terminology had not gone over well. Perhaps my more eclectic and empirical work proved more acceptable. Jim Hill, another Vernon alumnus and pioneer of the New Archaeology, was my mentor and close friend at UCLA. My closest collaboration was with the ethnographer Allen Johnson, who looked at the daily lives of those he studied and asked simply what was essential to them. Intellectually my interests came to focus on social anthropology. The British-inspired direction of the UCLA anthropology faculty was led by Hilda Kuper, a student of Bronislaw Malinowski, and extended by Sally Falk Moore, Francesca Bray, Nancy Levine, and Anna Simmons; all taught me the basics of their approaches. With their insight, I have come to realize that despite all sorts of historical specificity, social organizations operate with a measure of systematic process.

Human societies are highly variable, and most of that variation is historically contingent. I learned that about biological evolution from Ernst Mayr. A close reading of the chapters that follow should illustrate that I have been looking for the mechanisms, equivalent to natural selection, that shape the evolutionary processes of social evolution. I now believe that social evolution is directed by changes in the economy. Social institutions appear to be built by an emergent political economy involving complex interactions of intensification, surplus mobilization, and controlled distribution. Are these evolutionary changes progressive and good? Well, I guess that depends on how you are placed in the emergent social institutions, but we know that, for good or bad, human societies are made by us. In V. Gordon Childe's phrase from an earlier time, "man makes himself." The possibility for creating solutions to human problems certainly exists. That is what we felt in the 1960s and 1970s, and I still believe in the future potential to create a peaceful and just world. I should add that societies are not made by men alone; I have more faith in women and joint efforts.

In 1995 I was hired by Northwestern University to come in as Chair to help create an integrated four-field department of anthropology. Northwestern has been wonderful for me. I have appreciated the strong and highly varied economic interests of my colleagues Michaela di Leonardo, Jane Guyer, Karen Tranberg Hansen, Robert Launay, and Mary Weismantel. The archaeologists Jim Brown, Cynthia Robin, and Gil Stein have a strongly comparative view of complex human societies that is highly stimulating. I think that together we have been demonstrating how the subfields of anthropology reinforce each other, and more specifically how archaeology with its long-term perspective on

human evolution is a critical element of the discipline. Understanding human economies and their ties to complex social formations requires an archaeological perspective. I feel that I am helping to fulfill the promise of Marshall Sahlins's earlier work.

The chapters of *Bronze Age Economics* combine minor revisions of already published articles and new chapters written for this book. In revisions, my changes include the removal of background materials that overlap with other parts of the book, some minor changes in style for consistency, and updating the work in separate sections to tie the chapters to recent literature. The new chapters were written to fill in gaps so that a consistent view is given of each of the three cases discussed in detail. I have attempted to craft a unified version of how human economies function as the driving force for political institutions, but of course with each new conclusion comes several new questions. Academia's excitement springs from the continual quest for refined understanding. I feel that the synthesis provided here is the most comprehensive now available of society's economic foundations. That said, I expect many of the ideas presented here to be radically revised and replaced by future scholars. I only hope that my work will help today's students better understand the role of political economies in social evolution so that they can go on to surpass the work of my generation.

A preface traditionally acknowledges the support and contributions of those who have made the book possible. As a social anthropologist, that would require me to list all the members of my social circles. I want especially to thank Cathy Costin, Terry D'Altroy, Liz DeMarrais, and Luis Jaime Castillo for their initial collaboration and their rights to republish the articles that I wrote with them. These chapters and the collaboration on which they are based illustrate a much greater debt. As outlined in the Preface to my *How Chiefs Come to Power*, my former graduate students who worked with me in Peru, Argentina, and Denmark profoundly influenced my intellectual development. My history has been a close collaboration. As a materialist, I always look to the economic foundations of any accomplishment. Many institutions and agencies have supported my research, but none as fully or consistently as the National Science Foundation for work in Hawaii (GS728718X1), Peru and Argentina (BNS8203723 and BNS8805471), and Denmark (DBS9207082, DBS9116921, and SBR9600973). My deepest appreciation goes to my daughters, Caroline and Hester, who excavated with me in Argentina and Denmark and who always seemed to appreciate me, and to my wife Eliza, who married, tolerated, supported, and loved that youth of 1969.

Timothy Earle

Political Economies of Chieftdoms and Agrarian States

The title of this book, *Bronze Age Economics*, is chosen in reference and homage to Marshall Sahlins's famous *Stone Age Economics*, published in 1972. There he laid out elegant theories for how subsistence economies work in the Domestic Mode of Production for gift and for reciprocal exchange. These theories apply to simply organized societies, at the family level and local group, which he identifies with the Neolithic or new Stone Age. Here, with due respect, I would like to imagine volume two in that series, although I am sure he would have written it very differently. I seek to understand how and why political economies emerged as part of developing complex societies, chieftdoms, and agrarian states, which can be identified with the Bronze Age of the Old World and the Formative of the New World. I consider agricultural intensification, redistribution, prestige-goods exchange, political warfare, and ideology.

The political economy is the material flows of goods and labor through a society, channeled to create wealth and to finance institutions of rule. As I argue here, the evolution of human societies requires a political economy to mobilize the surplus for finance, and the alternative pathways to complexity may use different means to accumulate and distribute this surplus (Earle 1997). My book is about the emergence of chieftdoms and states without mercantile or industrial economies. I see these societies as the historical bridge between the traditional societies studied by Sahlins and the modern societies in which we now live.

A Brief History of the Anthropology of Instituted Economies

Argonauts of the Western Pacific (Malinowski 1922) challenged Western scholars to reconsider human economies in cross-cultural perspective. During World War I, Bronislaw Malinowski, a citizen of Austria, was deemed an "enemy alien" to the British empire, and he was interned voluntarily on the secluded Trobriand Islands. There, somewhat by circumstance, he conducted

anthropology's first in-depth ethnography. The Trobriands are a small island group off the eastern tip of New Guinea and, like many remote places at the beginning of the 1900s, these islands were relatively removed from the rapidly expanding world economy of capitalism. Malinowski (1922,1935) studied the Trobrianders' exchange of *kula* shell valuables with neighboring islands (Chapter 2) and their subsistence agriculture, which focused on yams. Questioning simple notions of "economic man," Malinowski showed that a non-Western economy could be fundamentally different from modern market economies in exchange relationships, systems of value, and cultural rationality. Anthropologists, he believed, could document and explain how distinct economies functioned to meet basic human needs within culturally distinct contexts (Malinowski 1944).

During the twentieth century, economic anthropology was born and thrived as a specialty within anthropology. Malinowski and his students (Forde 1934; Forde and Douglas 1967 [1957]; Firth 1939) developed the subfield as part of British functionalism, Mauss (1969 [1925]) focused attention on exchange as a social phenomenon in French structuralism, and Herskovits's (1952) influential *Economic Anthropology* defined the subfield within American anthropology. Economic anthropology used reconstructed ethnographic descriptions of non-Western societies to document subsistence, work, and exchange relationships prior to incorporation within Western colonial spheres.

In 1957, Polanyi, Arensberg, and Pearson published *Trade and Markets in the Early Empires*, which defined the substantivist approach whereby economies were understood cross-culturally as embedded within the social structure and as functioning to maintain that structure. Their book was a watershed contribution that used extensive historical and archaeological evidence of how nonindustrial economies operated. Through the 1960s and 1970s, a debate raged between formalists and substantivists (LeClair and Schneider 1968). The two sides represented a continuing tension within anthropology: on the one hand, to seek cross-cultural regularities that reflect shared human nature; on the other, to recognize cultural relativity with the uniqueness intrinsic to each culture. The formalists (most notably Schneider 1974) focused on "formal" (mathematical) maximizing and satisfying models to predict, based on perceived costs and benefits, how individuals choose among alternative possibilities to allocate limited time, money, and other resources. The substantivists (Dalton 1961; Sahlins 1972; Halperin 1994), in contrast, focused on how economies are embedded within cultural institutions to meet the material desires of societies. Each economy is thus considered to be unique, based on specific histories. The two sides of the debate have proven useful in highlighting different and complementary economic issues, and in 1980 the forming of the Society for Economic Anthropology reunited the subdiscipline.

The new synthesis is well represented by the edited text *Economic Anthropology* (Plattner 1989).

To retain the proper balance between substantivists and formalists (relativists and universalists) in economic anthropology, archaeological and historical studies have an especially important role. As the modern world economy continues to expand and transform local economies, ethnographers are increasingly restricted to studying only variants of a single modern system. The substantivist-formalist balance can be maintained best by studying extinct economies with historical and archaeological evidence. The agenda of Polanyi, Arensberg, and Pearson requires archaeology, as seen in Halperin's (1994) admirable use of it in *Cultural Economies: Past and Present*. Archaeology is establishing a central role in economic anthropology. A quick look at the bibliographies of both Halperin and this book shows the importance of two series in economic anthropology that maintain the comparative balance between studies of modern and ancient societies. First is the Society for Economic Anthropology's annual meeting, published as *Monographs in Economic Anthropology*. Second is *Research in Economic Anthropology*, an important series that includes many excellent archaeological and historical studies.

The central question that economic anthropology seeks to answer is: How and why are human economies very different across the world and across time? Deriving from the original formalist-substantivist debate, two approaches have proven fruitful. From a formalist perspective, variation has been explained as an outcome of common human decisionmaking processes under the constraints and opportunities of different technologies and environments. For example, Adam Smith's (1937 [1776]) *The Wealth of Nations* argued that economic expansion resulted from increased efficiencies deriving from capital improvements to technology, specialization, and trade. In one location or another, differential availabilities of raw materials (such as clay, metal ore, fuel, or water), of productive technology, or of labor determine costs of production; while available transport technologies (such as beasts of burden, wheeled transport, or large-capacity boats) determine distribution costs. Differential costs in production, as envisioned by Ricardo's Law of Comparative Advantage, may create local advantages that encourage specialization and trade that shape regional economies (Shennan 1999). Such lessons from microeconomics, so evident in the modern world, help us to understand differences in the extent and volume of commodity flows from one ethnographic or historical case to another. These models have been elaborated by economists and given close scrutiny by economic anthropologists, especially for the modern economies around the world as they become increasingly integrated within the globalized system. In the chapters of this

volume, I accept the importance of formal economic theories to explain decisionmaking processes in human economies; the reader may want to consult sources that consider these theories within comparative perspectives (such as Hames and Vickers 1982; Kelly 1995; Winterhalder and Smith 1981).

From a substantivist perspective, variation has been explained as an outcome of contrasting social and political processes associated with different human institutions. Here I emphasize the role of political institutions in creating different economic conditions cross-culturally and across time. As an introduction to an institutional perspective, I review briefly the Marxists, substantivists, processualists, structural Marxists, and new institutional economists as they have influenced my thinking. On the basis of the comparative, evolutionary synthesis of Lewis Henry Morgan (1888), Karl Marx and Friedrich Engels (Marx 1904, 1967 [1867]; Marx and Engels 1965 [1846]; Engels 1972 [1884]) developed an evolutionary narrative based on proposed changes in political economies. Marxists emphasized three main points: (1) social differences were derived from the material process in production (the stage of technological development and associated relations of productions); (2) political institutions were built by those in power to maintain and extend their domination over the economy and society; and (3) human nature was malleable, a product of the institutional arrangement of society. Since these seminal works of the nineteenth century, Marxists have developed these ideas, largely outside of anthropology and with explicit political agendas. Within anthropology, a fairly traditional Marxism was resuscitated after World War II by neo-evolutionists who included both ethnologists (Harris 1968, 1974; White 1959; Wolf 1982) and archaeologists (Adams 1966; Childe 1942; Earle 1997; Gilman 1976; Trigger 1998).

A second line of institutional economics derives from the early British and American ethnographers Malinowski and Boas. Neither would have seen significant intellectual connections to Marxism. As the major developers of the twentieth-century anthropological emphasis on cultural relativism, they emphasized the uniqueness of each society and culture. This relativism, however, mirrors Marx's argument that ideology and values are a product of a society's organization, functioning to reproduce the existing social arrangements. In transforming American anthropology in the 1940s and 1950s, British structural functionalism created the foundation for the substantivism of Karl Polanyi (1957). His famous chapter "The Economy as Instituted Process" and the Columbia University seminar and book of which it was a part revolutionized economic anthropology. Polanyi and the other seminar participants argued that a human economy has two fused properties. First is a substantive (material) process through which goods and services are produced, exchanged, and consumed to meet the wants of groups. Second is its form,

organized by social and political relationships that arrange interpersonal interactions across space and time. Making, giving, and trading are social events that are "instituted" according to a group's social structure, and alternative forms of exchange were described in the typologies of Polanyi (1957) and Sahlins (1972). Other concepts introduced in the 1957 volume included householding, administered trade, and ports of trade.

Sahlins (1972) introduced the concept of the Domestic Mode of Production (with its intriguingly Marxist sound), specifying Polanyi's original idea of householding. The DMP was envisioned as ideal household self-sufficiency in which household members produced most of what the household needed. Such a subsistence economy would not be growth oriented; the household's size would determine its consumer needs, and households would work to meet those needs. Following in the substantivist line, many ethnographers, historical anthropologists, and archaeologists have used Polanyi and Sahlins's economic formulations to analyze differences in traditional human societies.

A third line of institutional economics developed in the "new" or processual archaeology. Influenced by British structural functionalism, Julian Steward developed cultural ecology as a distinct approach in anthropology, but closely aligned intellectually with structural functionalism. He showed how subsistence, technology, social relations, settlement patterns, and other aspects of the culture core were an adaptation to particular environmental conditions. Causation shifted from the structure of the society per se to the reasons that particular social organizations (such as a political hierarchy) developed in certain environments (such as deserts requiring irrigation for agriculture and resulting central management)(Steward 1955b; Wittfogel 1957). These ideas fit well with the substantivist emphasis on the maintenance function of a traditional economy. To many anthropologists of the 1960s and 1970s, cultural ecology and economic anthropology appeared to be fused faces of the same process.

Nowhere was the coalescence of cultural ecology and economic anthropology clearer than among the processual archaeologists of the 1970s. Already by the 1950s with Willey's (1953) famous settlement pattern studies in Peru's Viru Valley (inspired by Julian Steward), American archaeologists had shifted increasingly toward an ecologically based paradigm, articulated by Binford as the New Archaeology. In England, a parallel concern with environmental relationships emerged out of archaeology's long relationship with geography, as in the work of J. G. D. Clark (1952), E. S. Higgs (1972), and Hodder and Orton (1976).

Both English (Renfrew 1975; Renfrew and Shennan 1982) and American archaeologists (Earle and Ericson 1977; Ericson and Earle 1982; Sabloff and Lamberg-Karlovsky 1975; Wilmsen 1972) extended the adaptationalist

perspective of the New Archaeology to consider how prehistoric economies were organized within varying social frames (Earle 1999). Patterns of prehistoric commodity flows (from material procurement and manufacture to consumption) began to be described with the goal of matching these patterns to the typologies of the substantivists (Renfrew 1975).

Archaeologists' interest in exchange and economic organization came to have a strongly Marxist overtone with studies of how economies could be controlled (Brumfiel 1980; Earle 1978; Oilman 1976; Spriggs 1984). By the 1980s, the New Archaeology had been transformed into an intellectually more eclectic and elastic approach often called "processual archaeology." But just as the processual paradigm was maturing, it came under a withering critique by post-modernist scholars (Hodder 1984).

In the 1970s and 1980s, as part of this critique of processual archaeology and cultural ecology more generally, the fourth line of institutional economics, called structural Marxism, emerged. Its intellectual history combined the materialist and evolutionist terminology of Marx, a structural approach from French and British functionalists, the relativism of Boas, and substantivist economists like Polanyi and Sahlins. Ethnographers of this group (Bloch 1989; Godelier 1977; Ingold 1980; Meillassoux 1981) described how structural relationships in traditional societies were reproduced through economic process. Although trained in a cultural ecology tradition, Jonathan Friedman (1974) criticized the "vulgar materialists," as he called the cultural ecologists; his criticism was reinforced by similar critiques from post-processual and structural Marxist archaeologists such as Hodder (1986) and Kristiansen (1984). In a structural Marxist analysis, Friedman and Rowlands (1977) describe how specific histories and associated modes of production resulted in different trajectories of development as observed between the Asiatic Mode of Production dependent on irrigation and the prestige-goods economies dependent on exchange and ceremonial display of objects of wealth. In retrospect, their work appears to be more a revision of substantivism with the addition of a Marxistlike terminology. Their critique of the New Archaeology and cultural ecologists was often on the mark, but parallel critiques from within were already evident, especially by Flannery (1976) and his students (Brumfiel 1980; Drennan 1976; Earle, Chapter 4).

Structural Marxism (Spriggs 1984), more traditional Marxism (Gilman 1976, 1981), and the broader post-processual debate infused a revitalized processualism that sought to explain how social stratification, ideology, gender divisions, and social relationships were shaped by the economic forces under specific historical, environmental, and political situations (Brumfiel 1992; Brumfiel and Earle 1987; DeMarrais, Castillo, and Earle, Chapter 14; Earle 1997; McIntosh 1999). Much of the post-modernist critique that social systems are

open and not self-regulating, that personal agency is universal, and that group interests within societies are diverse and often at odds has been accepted. For all intents and purposes, the four lines of institutional analysis of economic systems have fused.

The fifth, and as yet largely independent, line of analysis is that of the New Institutional Economists. A highly popular and award-winning school of institutional economists (North 1990) and now economic anthropologists (Acheson 1994; Ensminger 1996) have refocused attention on how institutions and economies are codependent. From their analysis of the advantages of lower transaction costs in commodity flows, they argue that political and social institutions are fashioned to regulate these flows, maintain regional peace, and guarantee contracts. The advantage of this line of argument is that it can potentially bridge formal economic theory with institutional economics. Although these ideas are only beginning to be investigated in prehistory (Steinberg 1997), archaeology offers an exceptional opportunity to understand this codependency.

Drawing rather eclectically from these five approaches, I seek to explain how complex political institutions were established based on certain economic options to intensify and mobilize surplus. To explicate how developing economies form the bases for developing societies, I rely heavily on archaeological evidence of prehistoric chiefdoms, the societies that encompass the range of middle range societies with expanding scales of integration and complexity in political structures. I see my work as a continuation of Malinowski's plea for a comparative approach to human economies.

Within less than a century, globalization has radically changed all economies as commodity flows from expanding capitalism engulf societies from the darkest forest to the most remote desert. Our views of human economies may again be distorted and limited by studying a single case, the modern interdependent world system. I draw attention to the extraordinary variation in human societies and economies that can now only be studied archaeologically and historically. Based on archaeological evidence, some recent statements and broader assumptions about the general nature and evolution of human economies should be reconsidered. For example, I see no long-term trend for the increasing amount of trade in human societies (Chapters 4, 10, and 12) or increasing specialization in commodity production (Chapter 6). The trend is toward intensification of the subsistence economy and selective control of the economy by emerging elites.

I analyze the economies of three cases: the complex chiefdoms of the Hawaiian Islands of the Pacific Ocean, the Wanka chiefdoms of Andean South America, and the Danish Bronze Age chiefdoms of northern Europe. Scattered as they are across the globe, what led me to study these cases? In many senses,

they share nothing in common except for emergent political complexity, and that is just the point. Prior to European expansion, conquest, and incorporation, these social developments were historically separate, but they shared common humanity and I see parallel developments in social stratification, centralized leaders, and ruling social groups (Earle 1997). To be sure, the differences are significant, some to be explained by different constraints and opportunities and some to be described as historical fortunes of chance. I seek to delimit what is common and what is distinct in the evolution of social complexity. Ernst Mayr (2000), Harvard's renowned biologist and once my professor in a large undergraduate class, describes how Darwin introduced historical specificity to the science of biology. This can be the goal for anthropology—a science of humanity, of our cultural histories, and of our diverse economies.

What Is an Economy?

Economies are open systems of production, distribution, and consumption of material things and social services. Economies involve resources extracted and goods manufactured, commodities and labor moved, and goods and services consumed in everyday life and in exceptional situations. From family meals to community religious ceremonies to imperial wars and affairs of state, economies provision and support human action. Economies vary greatly, and economic anthropology describes those differences and proposes how they emerge and make a difference. For purposes of the present discussion, I consider only traditional economies, defined as those for which mercantile and capital integration have been marginal.¹ The more we learn about the societies studied by ethnographers of the nineteenth and twentieth centuries, the more we realize how impacted they may have been by emerging world systems (Wolf 1982). In the past, however, most human societies were sustained by traditional economies, and the history of the transition to the modern world must be understood by taking into account the historical specificity of those economies and how their incorporation into the mercantile and capitalist world has resulted in the diverse economies of the modern global system.

Traditional economies contain two interrelated sectors: the subsistence economy and the political economy (Johnson and Earle 2000). The subsistence economy involves ways that households maintain themselves through everyday activities. Household members obtain food by hunting, gathering, fishing, and agriculture, and they manufacture tools that they need. In traditional economies, each household can produce much of what it wants, and

this household self-sufficiency is the Domestic Mode of Production (Sahlins 1972). Households do, however, exchange for some goods because of local resource deficiencies and local uncertainties at any time of need.

The political economy, in contrast, involves the ways that surpluses are mobilized and allocated to support political activities, lifestyles, and operations of social institutions and their leaders. The political economy is inherently competitive; since more is better (more resources = more power), the political economy is inherently growth oriented. Many are involved in ruling relationships, and the institutions of complex societies depend on finance to maintain their operations ([Chapter 8](#); Earle and D'Altroy 1989). The mobilization of a surplus requires a productive economy and its practical control. That control derives from command over quite specific activities involving production, distribution, and even consumption.

By practical control, political economies are built on subsistence economies, and together they organize all production, distribution, and consumption. The three factors of production are land, labor, and capital. Land, the first factor of production, involves the productive potential of nature's resources as developed by humans. To understand an economy, the first question to be resolved is the nature of land tenure (ownership). Who owns the land and what are the mechanisms of ownership ([Chapter 13](#); Earle 2000)? Lands can be open to use by anyone, limited to a specific group, owned by a group but allocated by its leaders, or owned by a discrete institution or individual within the group. As land use becomes intensified, land ownership is more easily asserted and becomes vested progressively in fewer hands. Ownership of resources creates relationships of power, allows control over the economy, and thus partly determines the nature of stratification in society. Ownership can be studied archaeologically by the built environment of settlements, facilities, walls, and monuments dividing the landscape into physical segments (Earle 2000).

Labor (people working) is the second factor of production. How labor is mobilized and organized underlies the potential and possibilities for all productive activities, and thus is probably the most significant factor in traditional economies. The simplest motivation of labor is immediate self-interest; people work to meet their own needs and desires. In traditional societies, the basic unit of labor organization is the household unit in which activities are divided by age and sex. Certain activities are male or female activities, old or young activities, but rarely is such division of labor absolute; others help as asked or needed. For the DMP, the household is a microcosm of the broader society containing within it the basic categories of labor.

With the evolution of more complex institutions, the problem is always how to mobilize labor to perform activities required for the operation of these

institutions. With the evolution of complex societies, tradition requires specific individuals to provide work for others (commoners work for chiefs to prepare for specific ceremonies). These labor contributions become formalized as *corvée* obligations. Through archaeological evidence, the mobilization of labor in the construction of monuments offers a way to study the structure of prehistoric economies (Chapter 13). The unit of human labor (one day's work) can be used to study how labor varies from one circumstance to the next (Kolb and Snead 1997).

Labor can be organized along a continuum from the generalized household labor of the DMP (producing for household needs) to the highly specialized labor of markets (producing particular goods for exchange among specialists) (Chapter 6). The division of labor within a society is a fundamental description of its complexity. Many have assumed that specialization, in making production more efficient, develops with the evolution of complex societies, but the cases analyzed here demonstrate that the relationship is more complex. On an everyday basis, the labor invested in manufacture can be estimated experimentally, and its organizational specialization described archaeologically by the spatial distribution of manufacturing debris.

Capital (technology and storable wealth) is the third factor of production. Although capital becomes the most significant factor of production in mercantile and capitalist economies, in traditional economies it is less significant. To be sure, technological improvements to land, such as walls, dams, irrigation, terraces, and the like, are essential elements of intensification. When land is improved in such ways, it becomes easier to define labor contributions (who built the ditches and terraces and under whose command they worked), and ownership is easily assigned. In some cases, ownership of particular technologies, like fishing boats and gear, may be quite important. Capital is also accumulated by amassing objects of value (Chapter 2) that take different forms and have different restrictions on alienability. As discussed in Chapters 2, 4, and 5, the development of a storable wealth is critical for network strategies in which production of staple goods can be converted into exchangeable tokens. Technology can be described archaeologically both as productive facilities like dams and ditches (Chapter 5) and as the moveable artifacts of production, including objects such as drills for bead production or scrapers for hide preparation (Chapter 12). Wealth is stored in staples and in objects of value, which can often be recovered archaeologically.

Distribution is a fundamental element of any economy, involving commodity flows through networks of exchange or trade. For all intents and purposes, exchange and trade can be used interchangeably to mean the person-to-person movement of goods through economic networks, although the two words embody different characteristics of analytical significance. Exchange

emphasizes the social relationships among the individuals in the network; trade emphasizes the significance of the objects and the potential for profit in movement and transaction. Analyzing patterns of distribution of raw materials and finished objects from their source of origin has become one of archaeology's best techniques for describing prehistoric economies (Earle 1999).

Substantivist economists have emphasized that commodities are distributed in traditional economies through existing social and political institutions. In other words, commodity flows are instituted by noneconomic relationships of kinship and hierarchy. Polanyi (1957) identified three mechanisms for transaction: reciprocity, redistribution, and market exchange.

Reciprocity is the exchange of encumbered gifts between individuals who are coequal (Mauss 1969 [1925]). Many nonstate societies are organized by reciprocal networks used for many functions (Dalton 1977). Goods and services are exchanged in these decentralized systems, person to person. The objects exchanged are often called gifts, rather than commodities, because of the social significance of the exchanges. Sahlin (1972) suggested that reciprocity can be subdivided into three subtypes (general, balanced, and negative) according to social distance. Among close kin, general reciprocity characterizes give and take without careful calculations of equivalency. Among more distant kin, as found within a local group, reciprocity is balanced, meaning simply that the amount given is remembered and evaluated for equivalency with the return gift. Negative reciprocity involves the sale, barter, or theft of objects between strangers. It includes market exchange.

Redistribution is the gifting of goods and services to a leader, who then allocates (redistributes) the goods and services to others. Redistribution characterizes hierarchical organized societies, such as chiefdoms and states. It can involve the local mobilization of staple goods or long-distance procurement of wealth objects. In contrast to earlier uses of the concept (Polanyi 1957; Service 1962), redistribution does not distribute commodities between locally specialized communities or individuals. It is a system of finance.

Market exchange involves the sale or barter of goods within a marketplace with the goal of making a profit. When markets are peripheral to a family's subsistence economy, as is common for many peasants, market involvement is limited to obtaining specific goods needed by family members (Sahlin 1972). People typically trade with a largely anonymous crowd. Here traders have no governing social relationships, and exchange behavior is determined by profit motivation. Exchange is often mediated by a currency, whose value is guaranteed by systems of weights and measures ([Chapter 2](#)). In an integrated market, an object's price is set by supply and demand, and changing prices regulate the amount of goods that are produced, transported, and consumed

within the economy.

When Polanyi developed his typology of exchange relationships, he envisioned that his types were alternative means to distribute goods within different institutional settings. Based on tradition, one society's economy would be organized one way; with a different history, another society could have a very different economy. Subsequent work, however, has shown that the mechanisms are appropriate for different functions: distributing goods, for which reciprocity and market exchange are alternative mechanisms given different volumes of trade (Sahlins 1972); and mobilizing goods as part of finance for which reciprocity, tribute, and taxation are alternatives ([Chapter 4](#)).

For different classes of objects, the substantivist Bohannan (1955) suggests that traditional societies have distinct spheres of exchange. The Tiv of East Africa exchanged everyday objects (food, tools, and dress) in one sphere and wealth objects (iron rods and women) in another. This means simply that a Tiv trader could not convert (exchange) objects from one sphere to another without serious loss/gain in prestige. Thus rods "should" only be exchanged for other rods or for women; because of a crisis, some Tiv had to trade (convert) wealth for food, although the trading was seen as a serious loss of personal prestige and standing. Weiner (1992) calls some goods "inalienable," meaning that they are so closely associated with an individual or office that they could not be traded without much loss of prestige. As discussed in [Chapter 2](#), however, and counter to some earlier assumptions, such spheres of exchange do not characterize traditional economies generally; rather spheres emerge with political hierarchies as a means to restrict access to prestige goods and to maintain existing social inequalities. The sphere in which wealth objects move represents prestige-goods exchange (Friedman and Rowlands 1977). I see these prestige goods as functioning to finance emergent social institutions.

Consumption, the final sector of the economy, involves the use and expenditure of objects in everyday life and special occasions. Rates and types of consumption of foods, tools, dress, finery, and prestige goods are determined by the value system and traditions of everyday life, what Bourdieu (1977) calls *habitus*. To the substantivists, that which is consumed and how much is used are understandable only through social histories. In taste there is no dispute; cultures recognize different patterns of living based on chances of cultural adoption that have little explanation. That said, patterns of consumption, in terms of both the objects used and who uses them, can be expected to follow social patterns of access and ideology that reflect the political nature of the societies being studied ([Chapter 11](#)). Thus the objects consumed within a society's households are involved in patterns of domination, resistance, and identity representing more general political and social processes (Bourdieu 1977). Why a specific object is chosen and what might be its cultural meaning

are unknowable to an anthropologist, whereas the material essence of the object, including its spatial association and its ability to be controlled or not (Chapter 14), is significant and understandable. We seek to describe and understand the cultural patterns of household consumption of objects and the institutional uses of objects by specialists and commoners in ceremonies and group work projects.

The Great Transformation and Evolutionary Process

Karl Polanyi's (1944) most famous book was *The Great Transformation*. He described how, in the recent past, economies were transformed fundamentally by the power of price-fixing markets of capitalism. Market exchange devalued and replaced the importance of social and political relationships in traditional economies, and the world, as Polanyi saw it, would never be the same. Intellectually his views were kindred to those of Durkheim and the British structuralists, who saw a great divide between state and nonstate (traditional) societies. This is an evolutionary perspective.

The evolution of human society is a fact of history that has been documented repeatedly in the archaeological record across broad time spans (Trigger 1998). Ten thousand years ago human societies depended on hunting and gathering, population densities were typically low (below 1/km²), and groups were organized as small associations of families. The development of domestication, of settled village communities, of hierarchical societies, of cities, and eventually of states transformed societies fundamentally (Harris 1977; Johnson and Earle 2000). Sociocultural evolution, not in uniform stages but in a multiplicity of parallel, historical developments shaped by common processes, is unquestioned. Evolutionary process (as opposed to "laws," see Mayr 2000) has sculpted the history and present state of human societies. The very term "economic development" is evolutionary, but as I have argued earlier, much modern thought concerning economic process and social evolution is based on concepts of functionalism and efficiency that must be questioned. A common scenario based on economic process is that as human populations grew and settled down into permanent village settlements, humans developed exchange in subsistence goods to adapt to contrasting availability in needed or desired resources (Fried 1967; Sanders 1956; Service 1962). It was thought that complex political institutions developed either to regulate the distribution of goods either through chiefly redistribution or to guarantee the peace of marketplaces. The basic scenario, as modernized by the new institutional economics, is as follows: Progressive specialization driven by increased productive efficiencies

caused progressively expanding exchange and the need to develop overarching institutional structures to limit resulting transaction costs. The logic is compelling, but anthropologists are wary of what seems self-evident.

Archaeology in the 1970s, 1980s, and 1990s provided rich evidence that exchange in subsistence goods and wealth was not progressive; in fact, it was highly variable and not correlated with political complexity (see, for example, Earle 1978, 1985; Brumfiel 1980; Hughes 1994). With few exceptions (Kirch 1991a), exchange is limited and episodic in stateless and many state societies. Archaeological studies in highland Peru ([Chapter 10](#)), North America (Baugh and Ericson 1994), and Polynesia ([Chapter 4](#); Weisler 1997), for example, show no correlation between the evolution of chiefdoms and increasing exchange, counter to earlier arguments (Service 1962). If, as documented archaeologically, systems of commodity flows did not develop monotonically, how are we to explain the variation in how economies expanded and contracted within different spheres of commodities? As discussed in this book, the primary determinant of the amount of exchange in human societies is the extent and character of the political economy.

The scales of political integration can be conceived heuristically as the following: the family level; local group and regional collectivity; chiefdom and chiefly confederacy; and state (Johnson and Earle 2000; compare Service 1962; Fried 1967). Exchange exists in all human societies observed ethnographically and documented archaeologically. The nature of exchange, however, changes according to the institutional contexts.

The family level of political integration (a.k.a. bands) comprises small and changing groups of five or so families (perhaps 25 people) that are coresidential in camps or hamlets. Within the local camp or hamlet, individuals are connected by generalized reciprocity based on division of labor by age and sex, cooperation, and regular sharing. Members also maintain extended regional networks that are essential for fluid movement and action. These networks carry flows of commodities between areas, allow movement to access resources, and are maintained by regular reciprocal exchanges (Wiessner 1977). No family-level societies are considered in this book, although a wonderful recent summary is available (Kelly 1995).

The local group of political integration (a.k.a. tribes) comprises perhaps several hundred members organized as villages or hamlet clusters. A village contains several extended families, sometimes called minimal lineages. Local groups are characteristically corporate; they own and defend agricultural land or other productive resources. Within a local community, exchanges are varied and complex; they characteristically involve formalized exchanges between specific social persons (as between in-laws), obligatory contributions to social events (as community ceremonies), and exchanges with individuals with some

specialization (payments to potters or shamans) . These exchanges can be quite limited and conducted with principles of balanced reciprocity.

Exchanges at this level of integration also exist outside the local communities and create regional webs used to access nonlocal goods, bring allies in war, and meet similar needs and desires (Dalton 1977). Commodities exchanged, usually in small amounts, include tools, drugs and condiments, and special materials like feathers, pigments, and shells used as wealth for personal decoration and media of exchange. Local groups can become bound together by political negotiations and ceremonial cycles orchestrated by local leaders, Big Men (Feil 1987), or other leaders. These regional relationships involve exchanges to form and materialize social and political networks. The regional collectivities of independent local leaders are decentralized political worlds that have some of the characteristics of chiefdoms. Local groups that I considered in this book include the Tsembaga Maring, the Mae Enga, and the Melpa of New Guinea ([Chapter 2](#)), and the different Neolithic cultural groups of Denmark ([Chapter 12](#)).

Chiefdoms ([Chapter 3](#)) are regional polities with institutionalized governance and some social stratification. Chiefdoms embed several local groups to create a regional polity with populations in the low thousands to tens of thousands. Locally, exchange relationships within embedded communities are little changed from those described above for the local group. Out beyond the local sphere, chiefdoms require institutional finance that mobilizes substantial labor and materials to support the operations of the emergent governing institutions. Institutional finance thus is the development of formalized systems of redistribution for staple products and for external procurement and local distribution of wealth ([Chapter 4](#)). Chiefdoms can be quite complex, with established hierarchies and regional paramounts, or they can be linked into confederacies by networks of exchange involving wealth goods, political alliances, common ceremonial cycles, and an international elite. These latter decentralized political systems have been called segmentary states (Southall 1988, 1999), peer-polity interaction spheres (Renfrew and Shennan 1982), and chieftaincies (Redmond 1998). Diverse cases of simple chiefdoms considered in this book include the Wanka I groups, the early periods in the Hawaiian sequence, and Early Bronze Age chiefdoms of Denmark. Complex chiefdoms include the Hawaiian Island chiefdoms, the Olmec, the Wanka II groups, and the early periods of the Moche.

States are regional and supraregional polities created through conquest and incorporation. They are distinguished from chiefdoms by some combination of governing institutions, such as administrative bureaucracies, control military, and/or formalized religious hierarchies. Support of the new and complex state institutions requires elaborate systems of finance. Some states, like the Inka

(Chapter 8), depend on local redistribution of staples, which is common in chiefdoms. Others use elaborate systems of tribute and taxation. Tribute results in long-distance movements of wealth from subjected polities toward the imperial capitol. Taxation is usually linked to market exchange and state currencies. The development of market exchange and currencies transforms economic relations in ways that support the evolution of mercantile economies and then capitalist world systems. Well-known examples of states included in this book are the Moche, the Inka, and protohistoric Hawaiian society.

In sum, the evolution of complex societies requires the development of systems of finance to support emerging institutions. Alternative ways exist to mobilize and distribute the goods and labor needed to support the activities of these institutions. My goal is to understand the historic and environmental conditions that determine the type of finance used by an emergent complex society, and how the type of finance channels subsequent changes in the society's economy and organization.

Materialism and Power

To help explain the choice between different systems of finance in the emergence of social complexity, it is useful to consider how alternative power strategies are fashioned and controlled. *Power strategies are the means by which ruling segments combine the sources of social power to pursue their political goals* (Chapter 14; Mann 1986; Wolf 1999). Strategies vary in terms of which sources of power are pivotal and how they articulate with each other. Chiefs shape their position with three primary power media: economic, military, and ideological (Chapter 3; Earle 1997). For the major cases considered here, leaders used these power sources in various combinations to rule. The ability to intensify and control aspects of the political economy is shown to vary across the three main cases (Hawaiian Island chiefdoms, Wanka chiefdoms of the Andes, and the Bronze Age chiefdoms of Denmark), and it is the particulars of the political economy that result in variations in the power strategies and long-term evolutionary trajectories.

Blanton and his coauthors (1996) distinguished two power strategies: corporate and network. These offer alternate ways to build political institutions. I believe that these two strategies (which are not alternatives) rest on differences in the political economy. *Corporate strategies* define relations of people to productive resources, typically in terms of ownership of productive lands. The institutional ownership of irrigation systems or pasturelands creates a power relationship by which access to the lands can be assigned to people in

return for their obligations to provide labor and/or goods to the chiefly owner. A corporate group in a complex society is not a commune. Access is structured in ways to finance the operation of a ruling elite, craftsmen, warriors, priests, managers, and commoners working on political projects. The Hawaiian and Inka cases rely heavily on corporate strategies by which systems of staple finance are structured.

Networked strategies define relationships of people to people through kinship, trade partnerships, and alliances. In complex societies, network strategies create broad systems of ideological and material exchanges binding leaders, would-be leaders, and followers together in networks of mutual support and competition. These relationships are intensely personal and highly fluid, but they become materialized by the gifting of wealth objects. The form of networks is given physical reality and visibility with objects, and the control over the manufacture and distribution of these politically significant objects is critical to understanding the nature of the networks in societies without written contracts. The Danish chiefdoms relied heavily on networked strategies, using systems of wealth finance to structure political hierarchies.

In [Chapters 3](#) and [14](#), I discuss three sources of power and how they are intertwined into and interdependent on power strategies. Relationships of dependency and control in the political economy provide the wire that binds the sources of power together (Earle 1997). For example, warriors may seize and defend the productive resources of the economy (its fields and animals). They can be controlled in part by being supported and armed by surplus collected through the political economy. Ideology institutionalizes the order of the economy as constituted in ownership rights and social and political obligations. The materialization of the ideological system can be controlled through ceremonial events and monumental constructions that require substantial expenditures of goods mobilized in the political economy.

The chapters that follow show how the political economy works and how its variation profoundly effects specific structural arrangements in complex societies and their economic organization. The Wanka chiefdoms depended heavily on local staple finance derived from intensive farming (irrigation, terraces, and drained fields). Centered on a hilltop fortress, each chiefdom defended the productive resources of its compact polity. Although they fought with each other, no polity was able to expand and dominate their neighbors. There was a fairly stable political standoff. The Danish chiefdoms depended on wealth finance, in which pastoralism was geared to exports traded internationally for metal, crafted locally into weapons and symbolic objects. These polities were highly dynamic, but unstable. Chieftains rose to power, only to rapidly fragment into smaller polities. The Hawaiian chiefdoms and the Inka state may have had the "right mix" of political strategies. They were based

on staple finance, but the elaboration of wealth production permitted an expansionistic system. They appear to exemplify how the leaders of chiefdoms could expand their polities into states by creatively combining multiple economic and political strategies for finance and control. But if chiefdoms were able to expand to create states in one circumstance, why not in others like the Wanka or in Denmark? The local ecology its potential for long-term intensification, and the ability to control surplus production from the subsistence economy are all of great importance in limiting or encouraging political development.

The Ecology and Politics of Primitive Valuables

This chapter investigates the form and function of primitive valuables in stateless societies. The goal is to explore the means by which the economic, ecological, and political uses of valuables are transformed in the early evolution of leadership and ranking. I see primitive valuables as being used by individuals to solve basic problems of subsistence, security, and control. As the nature of these problems changes with development of more complex societies, so do the ways in which the valuables are used.

A secondary purpose of this chapter is to clarify the formal characteristics of primitive valuables. Some characteristics are generally associated with valuables; others vary markedly depending on the particular uses of the valuables in a society.

This formal variation in valuables related to their use is particularly important, because it should permit the testing of propositions with archeological data. The synchronic ethnographic evidence for variation in the use of valuables is highly suggestive of evolutionary patterns; however, the evolutionary trends proposed here are only suggestive. They need testing against archaeological data that show changing form and content for the valuables within a local evolutionary sequence.

I begin with a general discussion of exchange valuables, outlining a typology for them and suggesting briefly the evolutionary contexts in which they are found. The chapter then focuses on one class of exchange valuables, that is, primitive valuables, and presents ethnographic cases as evidence for their forms and uses in stateless societies.

Typology of Exchange Valuables

In the anthropological literature a long-standing debate has existed concerning the presence of "money" in economies studied by ethnographers. On the one hand, scholars like Herskovits (1952: 240) argue that valuables exist that perform the same primary functions as money in Western societies and therefore can be called money. Other researchers emphasize that exchange

valuables in stateless societies provide only selected functions of modern money and therefore must be considered distinct (Dalton 1965).

In discussions of money (Neale 1976; Robertson 1948), lists of functions (store of value, means of payment, medium of exchange, standard of value, unit of account, and standard of deferred payment) and of associated characteristics (durability, recognizability, portability, quantifiability, divisibility, and fungibility) are identified as typical. However, anyone familiar with the use of valuables in stateless societies recognizes immediately that exchange valuables meet some but not all of these functional and formal characteristics. Dalton (1965) attempts to resolve this by calling the exchange valuables "limited purpose money"

The first order of business is to propose a typology of exchange valuables that attempts to establish the functional and formal variation among the sorts of exchange valuables encountered by ethnographers. Exchange valuables have been described frequently around the world and their many social, economic, and political functions are well documented (Goldschmidt 1973; Malinowski 1922; Meggitt 1972, 1974; Strathern 1971; Uberoi 1962). Exchange valuables share two basic functions. They serve as a *store of value* and as a *means of payment*.

As a store of value, an individual converts goods and labor by exchange or manufacture into valuables that can be maintained without appreciable loss in value. Characteristics associated with this storage function include durability, high demand, and limited supply. Durability maintains an item's value, high demand permits conversion, and scarcity restricts inflation. Scarcity can result from natural rarity, as in the case of the precious metals and genetic freaks (such as the albino deer of California), from foreign origin, from high costs of manufacture, or from controlled availability (like state currency).

As a means of payment, the exchange of valuables may be used to obtain other goods and services, to meet social and political obligations, and to establish new obligations for future services or payments. The value of an item is set not by its domestic use but by its acceptability in a variety of exchange contexts.

Beyond these basic functions and characteristics that define the inclusive class of exchange valuables, it is possible to recognize important subcategories. Most important is the division into primitive valuables and media of exchange.

Primitive valuables (Dalton 1977: 198), also "wealth" (Herskovits 1952: 244), are the most general. They are items of high value and often durability that are used in stateless societies (and to a more limited extent in state societies) as a means of payment and store of value. Well-known ethnographic examples include *kula* valuables, potlatch valuables, and East African cattle. As will be documented with several Oceanic examples, the range in uses of such

primitive valuables is considerable. Most basic are their uses to meet social and political obligations, including bridewealth payments and homicide compensation. They are often a key element in status rivalry, and a person's renown frequently is established by the quality and quantity of valuables received and given in competitive exchange events. Furthermore, valuables are used to exchange for subsistence items in various cases of need and emergency. The durability and uniformity of primitive valuables show considerable variability, and this variability, as I will argue, appears to be associated with social evolution and the changing use of the valuables.

Media of exchange are items used primarily as intermediaries in exchanges. Included in this general category are the primitive monies (Dalton 1977: 198-199) or commodity monies (Quiggin 1949: 316), and true currencies. Both forms of "money" are similar in how they are used as an integral element in exchange. Goods and services are exchanged for the money item which is then used to purchase other goods and services. The association with markets is strong and the primary function is to facilitate exchange by storing value between transactions. Secondly, these monies often serve as payment in social and political contexts similar to primitive valuables. The main distinctions between primitive money and currency reflect their context and origin (see Dalton 1977: 198-199). Primitive money is found in the "peripheral" markets of stateless societies and is manufactured individualistically. Currency is found in markets associated with states and is typically minted by state institutions. Polanyi (1968: 184-185) also discusses the importance of currency as a means of tax and tribute payment to the state, and this function was probably important for the introduction and use of many early currencies.

The formal characteristics of media of exchange are quite distinctive. Primitive money is typically manufactured to uniform specifications so that items within a category will be similar and of equivalent value. This makes recognition of value easy and is critical to facilitate exchange. Often such monies are divisible into units of value, like length of shell strings, that permit easy quantification. The basic trends toward quantification and standardization are further developed in currency minted by states. In effect, the state guarantees uniformity of value and establishes relative values among denominations. Many of the accepted characteristics of "money" (namely, recognizability, portability, quantifiability, divisibility, and fungibility) are strongly associated with the exchange functions. These characteristics are often seen in primitive money but become pronounced with standardized state currencies. The accounting functions of money in complex economies further emphasize the importance of these characteristics.

The Evolutionary Context for Exchange Valuables

In the preceding section, two major classes of valuables—primitive valuables and media of exchange—have been recognized, and the class of exchange media has been further subdivided into primitive money and currency (Dalton 1977: 198-199). Largely on logical grounds, it is possible to suggest how these different forms developed during the evolution of complex societies.

Primitive valuables with their generalized uses for social, political, and economic payments are very widely distributed and are found in most simple, acephalous societies. With the evolution of leadership and ranking certain valuables tend to become specialized as a sphere of exchange used exclusively for status competition.

In simple acephalous societies without extensive exchange, primitive valuables also serve as a rudimentary medium of exchange to buffer the system against irregularities in supply and demand. Then, as exchange increases and peripheral marketplaces are formed, certain primitive valuables appear to have taken on the more delimited functions of an exchange medium, and as a result become increasingly regular in form and are established units of value. The introduction of currency accompanies the development of state institutions, and in many situations an associated expansion in marketplace exchange and record-keeping functions takes place.

These evolutionary changes in exchange valuables suggest a strong trend toward uniformity within valuable categories with the explicit value relationship among categories becoming increasingly defined. Considerable variability characterizes primitive valuables, and in some cases it is difficult to establish relative values among categories; with the development of primitive money, consistency within categories becomes desirable to establish units of exchange; and, with the introduction of currency, uniformity and grading become the explicit ideals.

Primitive Valuables: Variations in Form and Function

We now turn to the issue of variation in primitive valuables as it may represent an evolutionary development. Three ethnographic examples from Melanesia that show different degrees of social and political complexity have been chosen for analysis here: the Tsembaga Marine, the Melpa and Mae Enga of the highland New Guinea core, and the Trobriand Islanders. My choice of

examples exclusively from Melanesia is based on the high quality of available data on primitive valuables in that region, basic environmental and economic similarities there, and my own familiarity with the literature.

The analysis of primitive valuables in these three ethnographic cases will be presented in the following format: (1) a brief sketch of the sociopolitical organization; (2) a description of the primitive valuables, including information on basic characteristics like internal consistency, durability, and availability; and (3) a discussion of the different economic, social, and political uses of the primitive valuables with a consideration of the degree to which spheres of exchange are developed.

Tsembaga Maring

Sociopolitical Organization. The Tsembaga Maring live in the highland fringe of New Guinea, along the Simbai Valley (Rappaport 1967: 8, 10). The Tsembaga region has a steep topography ranging in elevation from 670 m at the Simbai River to 2,200 m at the crest of the bordering Bismarck Range. Primary subsistence is derived from shifting cultivation of tuber crops and associated pig husbandry, which are concentrated in secondary forests between 900 m and 1,500 m. Wild plants, grubs, and animals provide significant subsidiary sources of food.

The Tsembaga are an archetypal small-scale, acephalous society (Rappaport 1967). Rappaport records about 200 individuals living on the compact Tsembaga territory consisting of 8.3 square kilometers (about 24 per square kilometer). They are but one of many similar small groups that are unorganized except through personalized exchanges and marriage bonds and that were, prior to pacification, engaged in frequent cycles of warfare with neighboring groups. Tsembaga organization is typically segmental. All Tsembaga form a territorial group that is a single ritually synchronized defensive unit. This territorial group holds unrestricted access to wild resources and permits internal marriage. The Tsembaga are internally divided into three subterritorial groups, each associated with a dominant clan that is putatively patrilineal. The subterritorial group is then divided into smaller subclans that form the basic economic unit, controlling rights to specific garden plots. These groups are not rigidly fixed but are actively involved in fission, fusion, and redefinition.

Politically, there are no chiefs or Big Men able to command activities of followers (Rappaport 1967: 28-31; Lowman-Vayda 1968). In marked contrast to what occurs in the highland core, Tsembaga leaders are not involved in competitive feasting and have very limited "spheres of influence." Their ability

to lead is strictly by example, while decisionmaking is largely amorphous. The Tsembaga are basically acephalous.

Primitive Valuables. Among the Tsembaga, valuables represent a named class of items (*mungoi*) that includes shells (gold-lip pearl, green sea snail, cowrie), feathers (bird of paradise, parrot, eagle), marsupial pelts, cutting implements (steel axes and bushknives, some stone axes), earth pigments, and some new European trade goods (money, cloth, beads)(Rappaport 1967: 103). Although not included in Rappaport's list, pigs should also be considered an important valuable among the Tsembaga as elsewhere in the highlands. For these valuables, consistency within categories is not discussed by Rappaport; however, within certain categories, such as among gold-lip pearl shells, feathers, and bridal axes, some variation in value appears inherently likely. As for the attribute of durability, the Tsembaga valuables include both durable items like the shells and axes and more fragile items like the plumes. The shells and axes provide a good store of value, and the plumes are valued primarily for their display use.

Factors affecting the scarcity of items are key for maintaining value, and among the Tsembaga, several constraints on the valuables' availability are well illustrated. Many of the items, such as the marine shells, are not locally available but, like shells, are imported into the highlands through exchange systems of many isolated links. The various plumes and marsupial pelts, and so forth, retain high value because of the rarity and elusiveness of these animals. Interestingly, feathers of the cassowaries, which appear to be more readily available, are not considered valuables locally, but are exported to other highland regions where they serve in bridewealth payment (Rappaport 1967: 56). Pigs, although not rare, retain high value because of the considerable production costs involved in tending and procuring sufficient feed. From this perspective, valuables are of two general kinds relating to the strategies necessary to amass them: (1) valuables that are rare because of foreign origin such that access depends on control of exchange; and (2) valuables that are rare because of high production costs such that access depends on control of production.

Uses of Primitive Valuables. The uses of primitive valuables among the Tsembaga appear to be typical of acephalous, egalitarian societies. The most basic use of valuables is in their employment as payments. For example, pigs, distributed as slaughtered meat during the *kaiko* ceremony of the Tsembaga, are the primary payment to affines and allies and symbolically a payment to the ancestors for their assistance in warfare. Other valuables serve as payments to meet key social obligations, most significant of which involve

affinal relationships. Bridewealth payments are made up of a wide range of valuables including the sea shells, marsupial pelts, bridal axes, and some European goods including money. The size of these payments is *not* set and large exchanges are considered socially desirable (Rappaport 1967: 108). The initial bridewealth payment may include a cooked pig and more than 30 valuables (Rappaport 1967: 103), and additional payments from a husband to his wife's family continue through marriage and at death (Rappaport 1967: 215). Valuables also serve as reciprocal payments for pigs in the main distribution of the *kaiko*, where an individual, typically an affine, who receives a pig will return a valuable such as a shell or ax (Rappaport 1967: 211). As mentioned, the size of these social payments is not set; rather, large payments are desirable to establish the prestige of an individual and his associated group. This pattern is typical of stateless societies and is a major theme elaborated in the more complex cases discussed in this chapter. The importance of establishing a prestigious status in stateless societies reflects the inherent competition among individuals and groups for exchange ties and the importance of these exchange ties for a society. As Dalton (1977) discusses generally, exchange in stateless societies is critical for a group as a means to obtain marriage partners, allies, subsistence security, and trade goods. Valuables play a central role in the creation and maintenance of these relations.

A second dramatic use of valuables is for personal adornment. Shells, for example, are used in daily dress and bridal axes are carried on peaceful visits (Rappaport 1967: 191). More important, valuables are used for spectacular adornment during the *kaiko* ceremony (Rappaport 1967: 186). The focal element is the headdress:

Most attention is given to the headdress. A crown of feathers, eagle and parrot being most common, encircles the head. The feathers are attached to a basketry base, which is often hidden by marsupial fur bands, bands made of yellow orchid stems and green beetles, or festoons of small cowrie shells. From the center of the head rises a flexible reed, two or even three feet long, to which is attached a plume made either from feathers or an entire stuffed bird. The lesser bird of paradise, the Princess Stephanie bird of paradise, the greater sickle bill, and Pescot's parrot are most common. Plumes, particularly those of the King of Saxony bird of paradise and the racket-tailed kingfisher, are worn through the pierced septum from which also maybe suspended a shell disk and gold-lip crescent. [Rappaport 1967: 186-187]

Additional adornment includes earth pigments on the body, necklaces of shell and beads, and cowrie shell leg bands. As is evident, many valuables are used in display, some of which (especially shells) serve also in affinal payment and others of which (especially the plumes and pigments) serve only in the display.

A final use of valuables is in exchange for subsistence items including working axes and salt (Rappaport 1967: 106-108). Among the Tsembaga, there are no media of exchange and the primitive valuables are not segregated into a

separate sphere of exchange but are broadly exchanged for nonvaluable items.

Rappaport develops a most interesting assessment of the use of valuables in this context. Primitive exchange systems that handle utilitarian items alone would be inherently unstable because production of one item, like axes, is set not by the systemwide requirement for axes but by the producer's finite need for exchanged products like salt. Given changing needs within the system that are a function of population dynamics, imbalances in supply and demand will quickly surface. Because exchange rates are traditional in such exchange systems, the standard mechanism of fluctuating price is unavailable to adjust, on the short term, to changes in supply and demand. Such fixed rates, while creating economic rigidity, are probably necessary in a society like the Maring, which is not organized regionally, and where exchange depends largely upon personalized relationships characterized by a sense of equity, if not generosity.

The problems created by short-term fluctuations in demand for utilitarian goods can partly be offset by the exchangeability of valuables for subsistence goods. Because the demand for valuables is not finite, remembering that the more valuables used as bridewealth payments or as adornment the better, when a group has met its subsistence needs, it will exchange goods for valuables rather than ceasing exchange activities. Valuables therefore act as a rudimentary medium of exchange that is useful when subsistence items are not acceptable. The regular use of primitive valuables in trade systems contradicts the idea that spheres of exchange, separating primitive valuables from subsistence-related goods, are typical of traditional societies (cf. Bohannan 1955). I will return to this point in a later discussion.

The Melpa and the Mae Enga of New Guinea's Highland Core

Sociopolitical Organization. To represent the core highland regions of New Guinea, the Melpa and Mae Enga have been chosen for discussion because of the extensive ethnographic materials on them dealing with the role of primitive valuables. The Melpa are located in the Mount Hagen area along the upper drainage of the Wahgi River (Strathern 1971: 5). Their environment is typical of the highlands, ranging from the broad grassland valleys at about 1,200 m to the high mountain slopes up to about 2,400 m. Subsistence is focused on intensified shifting cultivation of sweet potato in the grasslands and secondary forests. The Mae Enga are located about 250 km to the west along a number of highland valleys (Meggitt 1965, 1972). The environment is roughly similar to that of the Melpa, but at somewhat higher elevation. A typical clan

territory extends from the rolling valley floor at about 1,800 m to the bordering slopes over 2,400 m. As with the Melpa, subsistence relies on the sweet potato that is grown with a distinctive pattern of mounding in the valley bottom and lower slopes. Hunting provides little meat, but pig husbandry is a significant source of protein. Population density of the Mae Enga is quite high, about 62 per square kilometer compared to 38 per square kilometer for the Melpa (see Brown and Podolefsky 1976).

The Melpa and Mae Enga are organized by the principles of segmentation characteristic of the stateless societies of Melanesia (Brown 1978; Meggitt 1965, 1977; Strathern 1971). Although the specific characteristics and terminologies for these systems vary considerably, the basic principles are similar. In the processes of group expansion, a patrilineal group will fission along subgroup (lineage) lines to form new groups that retain social ties important in intergroup relations. For example, among the Mae Enga, the patrilineal clan is the basic social and political unit. The clan holds territorial lands that, although small (typically 2.5 km²), cross-cut the main resource zones used by the Mae Enga. Clans are typically 350 in size; they are exogamous and politically autonomous, and form the primary defensive unit protecting clan lands against encroachment. These clans are segments of phratries that on the average contain seven or eight clans. All the clans of one phratry consider themselves agnates or "brothers," descendants in a single male line. Phratries are, however, not exogamous and marriage within phratries is common; distant agnates are simultaneously close cognates. Warfare between clans of a phratry occurred, despite a feeling that conflict should be avoided (Meggitt 1977: 28-29). For all intents and purposes, the clan is the politically significant unit. All other clans are potential enemies in conflict over basic subsistence resources. Interclan relationships are critical for obtaining allies in conflict and for exchange of locally unavailable resources.

Although there are no hereditary or elected leaders among the Melpa and the Mae Enga, group leadership is provided through Big Men who rise to positions of renown, and political control is exercised by successful competition in exchange ceremonies, referred to as the *tee* among the Mae Enga (Meggitt 1972, 1974) and the *moka* among the Melpa (Strathern 1969, 1971). In addition to orchestrating these exchange ceremonies, Big Men are actively involved in war planning and peace making (Meggitt 1977: 29, 34; Strathern 1971: 79). As argued persuasively by Meggitt (1972), a group's survival potential is related to its leader's renown.

Primitive Valuables. Among the Melpa and the Mae Enga, the lists of valuables are long and include a diversity of items. On the Melpa list are pigs (live, pork, and grease), marsupials (live, meat, and furs), shells (gold-lip pearl,

green-snail, bailer, cowrie, nassa, and conus), axes and axe blades, salt packs, plumes (bird of paradise, cassowary), decorating oil and red ochre, and recently Australian money (Strathern 1971: 101-106). The Mae Enga list has all the basic categories of the Melpa list and a number of other craft items such as bows, spears, drums, bags and aprons, and various woven goods in the categories of intermediate value (Meggitt 1972: 115).

The issue of consistency within categories is not discussed at length for either society. However, for the gold-lip pearl shells, Strathern (1971: 237) says that characteristics including size, color, and symmetry affect value and shells are classed into three grades based on quality. These grades are ranked but *not* fixed as to any quantitative value interval; the only equivalency is between shells of identical character.

The finest shells thus have a higher unit value, but there is no standardized quantitative value interval (Dalton 1965) between the three grades. Hence they cannot be directly converted into each other. If a man wants to exchange a shell for another shell, he exchanges for one which he considers an exact equivalent of his own. This transaction marks that men are equals and friends, just as their shells are equivalent. [Strathern 1971: 237]

Individual shells were at one time named, but this practice has been discontinued as the shells generally became plentiful (*ibid.*: 236). At present, value of a prestation appears based primarily on the *quantity* of items from different categories of valuables, but the quality of individual items may at one time have been more important.

For the Melpa and Mae Enga valuables, the characteristics of durability and scarcity are generally similar to the Tsembaga case. In terms of durability, some valuables like the shells and axes are highly durable and serve as excellent stores of value; livestock, especially the pigs, are a reasonable store of value but require considerable expense in maintenance; while items like the plumes are more fragile and are valued for their use in display. Scarcity, key to maintaining value, is governed by localized and foreign origins, and by high production costs, as discussed for the Tsembaga.

Uses of Primitive Valuables. The uses of primitive valuables among the Melpa and Mae Enga are similar to those for simpler acephalous societies, but with the dramatic extension of their use in competitive exchanges. Valuables are used as payment for social obligations in bridewealth (Meggitt 1974, 1977: 122; Strathern 1971: 93, 102, 103, 105), in other affinal and maternal exchanges (Meggitt 1977: 122; Strathern 1971: 93), and in homicide compensation (Meggitt 1977; Strathern 1971: 88, 90, 94). Typically such payments involve the use of certain valuables, such as pigs and cassowaries among the Mae Enga (Meggitt 1974, 1977: 122). Strathern (1971: 105-106) notes that stone axes, cowrie ropes, and nassa mats were used prior to 1940, but that they are now largely replaced

in bridewealth payments by the pearl shell and cash and that all other valuables given in bridewealth (including pigs, plumes, various shells, salt, and decorating oil) are used as "bonus" gifts to augment the overall value of a payment.

In comparison to the Tsembaga, the major difference in the Melpa and Mae Enga use of the valuables is their importance in the competitive exchanges of the *moka* and the *tee* (Strathern 1969, 1971; Meggitt 1972, 1974). These exchange systems comprise linked ceremonial exchanges that interconnect separate territorial groups. Each event is composed of many individual exchanges that are displayed and presented together. For example, in the *moka* ceremony each individual *moka* exchange has two parts, an initiatory gift from A to B and a larger main gift from B to A that is presented at a group ceremonial display. In the future, the exchange will be reversed with the initiatory gift offered by B and the following main gift offered by A. In this situation, A's goal is to gain prestige by offering a gift that must be larger than the previous main gift. Each individual exchange takes place in the broader context of a group presentation orchestrated by the Big Men.

Prior to the group's ceremonial presentation, the individual exchange relationships are established. With the future recipients as spectators, the donor group then meets at the ceremonial ground of its Big Man, who takes a prominent role in establishing the appropriate gifts from all his supporters and persuades reluctant individuals to commit themselves maximally. Then, the gifts are dramatically displayed on the ceremonial ground and finally transferred with accompanying oratory and elaborate dancing (Strathern 1969, 1971:115-136).

Such a *moka* event is a highly political affair. The group's Big Man works hard to prepare for a ceremony that maximizes the effect of the exchange so as to increase both his prestige as a leader and generous man and the prestige of his support group as reliable and desirable partners in exchange.

As Meggitt (1972) makes explicit, however, this "prestige" is not an empty honor but is the essential element in the success and survival of a group and its Big Man. Because of the endemic warfare and competition over land, to remain viable a local territorial group must keep a strong fighting capability. In addition to group size, the formation of alliances outside the group is critical. Basically, success in competitive exchanges is a measure of political and economic ability that makes the Big Man and his group desirable partners and allies. A successful group can expand its external networks, which assure the group's viability in conflict situations. Valuables, therefore, are amassed and distributed in competitive exchange as a way for an individual and his group to gain political prominence.

Associated with this political use of valuables is their secondary function in

display, especially at the intergroup ceremonies associated with the competitive exchanges. For example, at a *moka* dance, individuals take great care to be impressively bedecked:

The men wear arrays of plumes inserted into their wigs, pearl-shell pendants on their chests and green-snail pieces hung from their ears, and especially fine bark belts and aprons. They rub their bodies with pig-grease or tree-oil, and paint their faces with charcoal and ochre, picking out their eyes and noses in red and white. [Strathern 1971: 119; Strathern and Strathern 1971]

Many valuables are worn in ceremonial display and the visual impact must be gauged by the quality and quantity of valuable items used.

The more general use of valuables in exchange has not been elaborated on for the Melpa and Mae Enga. In contrast to the Kapaukuans of the western highlands of New Guinea (Pospisil 1963), no well-developed media of exchange exist. Apparently, however, valuables were not rigidly isolated as a separated sphere of exchange but were exchangeable for subsistence goods. Strathern (1971: 112) mentions that the argument developed by Rappaport (see earlier discussion) applies as well to the Melpa. Interestingly, various exchange valuables—including pigs, marsupials, cassowaries, salt packs, and axes—are used both as payments in social and political exchanges and as utilitarian goods (food and tools) (Meggitt 1972, 1974; Strathern 1971: 102). This is seen most clearly for the pigs, which are simultaneously the main exchange valuable *and* the primary meat source for highland New Guinean societies. However, based on Strathern's (1971: 237) discussion of the gold-lip pearl shells cited earlier, the incipient structure of an exchange sphere using key valuables is found in these highland Big Man systems.

Trobriand Islanders

Sociopolitical Organization. The small group of Trobriand Islands lies off the eastern tip of New Guinea, and consists of a number of flat coral islands with one dominant island (Kiriwina, approximately 180 square kilometers), along with several smaller islands. The subsistence economy combines bush fallow gardening of yams and other crops and fishing in the lagoon and offshore. Population density averages about 40 per square kilometer, generally well distributed, but somewhat higher in the better agricultural areas such as in the Omarakana village cluster (Powell 1960: 119, map 2).

Extensive ethnographic work began soon after pacification with the famous study by Malinowski (1922, 1935), and was followed by later studies by Austen (1945), Powell (1960, 1969), and Weiner (1976). Several reanalyses have appeared (Uberoi 1962; Burton 1975), and although a number of controversies linger, a basic outline of the society's organization is generally agreed upon as

perhaps best articulated by Powell (1960). The basic organizational unit is the small village of perhaps 65, but always less than 100. A village may contain one or more matrilineal subclans that hold corporate title to land; however, one subclan dominates and its leader is the leader for the village. As many as two to six villages frequently group together to form a cluster that represents separate corporate groups that are united through frequent intermarriage and interaction. The cluster is highly endogamous, and prior to pacification formal warfare did not occur between component villages. Although village clusters might for a time not have a leader, usually the recognized leader of the highest-ranking subclan and village coordinates activities within the group. The small size of the cluster should be emphasized; maximum population is below 500 and the villages are rarely more than a few miles apart. Political organization beyond the village cluster is not unusual, but it depends upon the initiative of high-ranking chiefs to establish intercluster domination through intermarriage and tributary control.

The political organization of the Trobriand Islands is similar to Melanesian Big Man systems; however, important differences reflect inherited rank (Powell 1960: 118). Leadership positions are recognized at the four hierarchical levels of subclan, village, village cluster, and intervillage cluster. Within a subclan, access to the leadership position becomes critical for high-ranked lineages. Essentially, the leader of a village's dominant subclan is the village's leader, and the village leader from the highest ranked subclan of a cluster acts as the cluster's leader. A cluster leader of the highest rank may then attempt to extend his power and regional control by marrying into other clusters and bringing them into a tributary relationship (Powell 1960; Malinowski 1935).

Within this dynamic system of political relationships, competition is a critical element in three situations. First is the competition within an elite subclan for leadership. Because this involves leadership also of the village cluster and perhaps beyond, the aspirant must establish support among key individuals both within and outside his subclan (Powell 1960: 129). Second is the competition among high-status village cluster leaders for support outside their cluster. As Powell (1960) makes clear, no established political units exist above the cluster so that each elite leader of a cluster must decide whether to expand his political influence externally to his cluster. This places the aggressive leader in direct conflict with other leaders either who wish to maintain the autonomy of their cluster or who wish to expand their control over the same region. Prior to pacification regional warfare involving fighting between competitive elites was an important element in political power relationships (Powell 1960: 140-142). Third, competition is an element in all intersubclan relationships. As mentioned earlier, subclans are ranked among themselves and this ranking is based on particular powers that make the

subclan members and especially their leaders "dangerous" (Powell 1960: 128). These ranking relationships are, however, not static but can change according to the success or failure in the competitive arenas of food production and *kula* exchange (Uberoi 1962). In brief, the competitive dynamics of the Big Man system operate in the Trobriands with the important added element of intersubclan ranking. This ranking determines eligibility for political office and is critical both to the individual and on a long-term basis to the group he represents.

Primitive Valuables. On the Trobriand Islands, a special class of primitive valuables is labeled *veguwa* (Malinowski 1922; Weiner 1976; Powell 1980). (*Veguwa* is Weiner's corrected transcription of Malinowski's term *vaygu'a* as used commonly in the secondary literature on primitive valuables.) In this category, the most important items are the *kula* valuables that include the renowned shell necklaces (*soulava* or *bagi*) and conus shell armband pairs (*mwali*) in addition to the less well described local shell necklaces (*katudababile*) and the circular boar's tusks (*doga*) (Malinowski 1922: 357-358). Other *veguwa* include the important ceremonial ax blades (*beku*), in addition to lime spoons, belts with decorative shell, imported clay pots, female skirts in certain contexts, cash, and a number of other items including pigs and ceremonial yams (Malinowski 1922; Austen 1945; Weiner 1976). As we will see, this long list of valuables is subdivided into separate classes that serve as payment in distinct social and political contexts.

I pointed out earlier that the three characteristics of most interest in analyzing valuables are consistency, durability, and availability. In the Trobriand case, consistency within categories is explicitly not a desirable characteristic of the major *veguwa* categories including *soulava*, *mwali*, and *beku*. For the main *kula* valuables, each piece is individually named and its value reflects esthetic evaluations of its material and manufacture and the precise history of its many exchanges and ceremonial uses (Malinowski 1922: 89, 172). Similarly, the ceremonial axes (*beku*) are individually named and differ in value according to size (Weiner 1976: 179). The history of an individual *beku* is carefully remembered and the original owner may reclaim the *beku* in exchange (Weiner 1976: 180-181). Individuality, not equivalency, is the essential characteristic of these valuables.

Durability, important for use as a store of value, is characteristic of the main *veguwa* including the shell valuables and the ceremonial axes, and they actually accrue value as they are used in particular ceremonial displays and exchanges. Malinowski (1922) recorded *Kula* items that have made a complete circuit in the *kula* system and Weiner (1976: 179-183) describes the permanency of the *bekn*. This attribute of durability is accentuated for the

Trobriand valuables, and this contrasts with the many New Guinean valuables that are used primarily in display.

The availability of the key Trobriand valuables is restricted and acts to retain their scarcity and value. Availability is limited by the natural scarcity of the raw materials and by the amount of labor required in manufacture. The high-quality reddish shells used to make the *soulava* necklaces come from the Rossel Islands and Port Moresby, both outside the *kula* ring (Malinowski 1922: 507). Other raw materials are localized within the *kula* ring, like the conus shell for the *mwali* from the Trobriand lagoon and the Woodlarks and the fine greenstone for the *beku* from the Woodlarks (Malinowski 1922: 502-507). While the sources of these materials are within the exchange ring, value is maintained by the scarcity of highest quality shells and stone and apparently to a lesser extent by the labor involved in manufacture.

Malinowski (1922: 507) also mentions that valuables are lost to the *kula* ring by exchange outside to other non-*kula* groups. For example, the *mwali* were traded westward toward Port Moresby, where their value was higher than in the adjacent *kula* system. This emphasizes that value often reflects high demand for an item throughout a broad region and may not be understood by its particular demand within a small area like the Trobriands.

Uses of Primitive Valuables. The uses of primitive valuables in the Trobriand Islands include social payment, political manipulation, display, and trade. These general uses are the same as for the societies discussed earlier; however, important differences appear to be associated with the incipient social stratification and political centralization of the Trobriands.

The most basic use of the Trobriand valuables is as payment in various social contexts. Valuables, including axes, shell necklaces, the Amphlett pots, and cash, are affinal payments at marriage, at the receipt of *urigubu*, and at death (Malinowski 1922: 193; Weiner 1976: 70, 74, 178). Within a subclan, payment of valuables, especially the axes, is used to gain access to land and magic (Weiner 1976: 156, 159). In these social exchanges generally, valuables are reciprocal payments for yams or for the means of yam production. Because access to yams through marriage and *urigubu* is a key element in Trobriand politics (Malinowski 1935), these social exchanges take on important political overtones.

The distinctive aspect of Trobriand exchange valuables is their use in political maneuverings. Leaders give valuables to reciprocate the large *urigubu* gifts they receive as an incipient form of regional tribute (Malinowski 1922: 193), give valuables to their sons who are not members of their subclan but who act as key external political supporters (Uberoi 1962: 101), and receive valuables from subclan males who are anxious for garden land (Weiner 1976:

156, 159). Vertical economic and political relationships are thus explicitly expressed in the local exchanges of valuables.

The more dramatic political use of valuables is in the *kula* exchanges themselves. As discussed earlier, leadership on the Trobriand Islands involves intense competition similar to that observed in the less structured Big Man systems of New Guinea. Leaders seek prestige and power by their participation in *kula* exchanges, and the leaders are the initiators and main participants in overseas *kula* voyaging. In a leader's search for power, he must attract support among the uncommitted outside his village cluster, and his success is based on his renown established in the competitive events of yam harvests and of *kula* exchange. At the end of an overseas expedition, success in *kula* is assessed during a comparative display of the valuables (Malinowski 1922: 375). Uberoi (1962: 108, 109) argues convincingly that these large competitive expeditions act thus to adjust status relationships among the subclans represented by the various leaders. Therefore, *kula* exchange acts to establish the individual renown of the leader and to regulate status position of the leader's subclan. *Kula*, with its exchange of the main valuables, acts to establish leadership and the broader structure of hierarchical relationships.

Of related, but clearly secondary function, valuables are also used in display during major dances (Malinowski 1922: 87-88) and at death (Weiner 1976: 69, 83, 112-113). An individual's renown is certainly marked by the display of his valuables when worn by his children, relatives, and supporters and in certain contexts by himself. Part of the individual history of a valuable appears to have involved when and by whom it was worn (Malinowski 1922: 89).

The use of the exchange valuables in trade shows a significant difference from the other societies discussed so far. In the Trobriand Islands identified spheres of exchange exist in which goods are exchanged primarily within specific categories (Bohannon 1955). Individual goods are used as payment in particular contexts and are *not* broadly exchangeable against each other. For example, the two primary *kula* valuables (*mwali* and *soulava*) are, within the context of the *kula* exchange, the acceptable payment for each other. Within the *kula* ring, necklaces (*soulava*) move in a clockwise direction against the armbands (*mwali*) that move counterclockwise. When Malinowski (1922) described the *kula* system, these two valuables were recognized as a separate exchange sphere analyzable quite apart from other exchanges in the Trobriands. Although the simplicity of the system as isolated by Malinowski has been questioned and the valuables that become *kula* items are involved in other social exchange, certainly the exchange uses of the *kula* valuables are comparatively narrow. Most important, this means that these key valuables were not exchanged commonly for other valuables and certainly not for utilitarian items. In the Trobriands, where the *kula* valuables take on explicit

political functions, they clearly never function as a medium of exchange.

With this in mind, however, the relationship of the *kula* valuables to broader exchange is critically important. Malinowski (1922: 354-356) has an interesting discussion of solicitory offerings in the *kula*. The simplest *kula* exchange involves an initiatory gift and a delayed counter-gift of the main reciprocal valuables; however, when an individual wishes to encourage the presentation to him of a key valuable, he will actively solicit the gift by offering other kinds of goods that include large quantities of food and craft products. As would be expected, in order to be effective, solicitory giving involves the movement of goods from areas of high supply to areas of high demand. For example, the Trobrianders who normally produce a surplus of food products give food as solicitory gifts to their trade partners on the Amphletts, where food production is inadequate to meet local needs.

In addition, the large overseas ceremonial exchanges of *kula* valuables create a sizable interregional gathering at which simple barter exchanges (*gimwali*) of a wide range of food and craft goods take place (Malinowski 1922: 83, 99-100, 362-364). This is a good example of how a ritual occasion in stateless societies creates the key conditions (a peaceful gathering from diverse economic regions) for a marketlike exchange. The political exchanges of the *kula*, therefore, have a secondary economic function (Austen 1945: 26). Uberoi (1962: 156-157) argues convincingly that the *kula* exchange is a means for agriculturally impoverished islands like the Amphletts to obtain essential food, and for other islands to obtain key localized resources, such as pottery or stone for axes. *Kula* exchange can provide the critical intersocietal relations to maintain the economic interdependence of the region. Elites provide essential economic functions by initiating the ceremonial exchanges and by guaranteeing the peace of the marketlike exchanges.

Variation in the Characteristics and Functions of Primitive Valuables

Based on the examples discussed above, an argument may be constructed about how the characteristics and function of primitive valuables may have changed with the initial evolution of leadership positions and social differentiation in stateless societies. The cases chosen can be construed as representing an evolutionary development toward increasing complexity. The Tsembaga Maring is a simple, small-scale society lacking significant leadership, regional organizations, and ranking. The Melpa and Mae Enga are similar in most respects to the Maring, but they are radically different in the elaboration

of group leaders, that is, Big Men, who create their positions of authority and power by manipulating political, economic, and social relations. These societies lack established political offices and social ranking. The Trobriand Islanders, although in many ways similar to the Big Man systems, show the beginnings of political offices at the local level, of social ranking whereby the relative ranking of subclans determines suitability for group leadership, and of incipient regional organization with the expansion of political control by certain leaders. The evolutionary trends represented are toward increasing leadership, regional integration, and social differentiation.

The question is: How do valuables change in these changing sociopolitical contexts? First, it must be emphasized that many aspects of the primitive valuables are similar in all cases considered. The items used as valuables are basically similar, as are their general uses. In all these cases, valuables include rare raw materials (either foreign or localized), craft products, and livestock, items that are typically durable and in high demand for multiple social, political, and economic uses. Perhaps the most general uses for the valuables are as payment in social exchanges, for example, for bridewealth, and as means to garner individual and group status.

However, despite the general similarity in valuables, certain important differences emerge in the use of the valuables in political and economic contexts and in their physical characteristics. The changes in political uses of the valuables are pronounced. Among the Tsembaga Maring, exchange of valuables is important for establishing an individual and group prestige but competition is individualistic and not elaborated beyond personal adornment. Among the Melpa and Mae Enga, this use of valuables is greatly expanded by the emergence of Big Men as key individuals in the exchanges, and as group organizers of exchange events. Among the Trobriand Islanders, the exchange in *kula* valuables becomes increasingly delimited to political affairs, and the scale of the political competition in *kula* is further elaborated in areal scope. The clear trend is toward politicization in valuable exchanges with the concomitant increasing importance placed on control over exchange in the valuables.

As politicization of valuables develops, variability within the categories of the key valuables becomes emphasized and probably increases markedly. (This trend is opposite to that suggested for increasing standardization as media of exchange develop.) In a simple acephalous society where valuables are used generally, variation within categories would probably approximate a normal distribution. However, as certain valuables become central to political competition, as seen in Big Man and chiefdom systems, the quality of individual items becomes crucial. These important valuables, such as the gold-lip pearl shells and *kula* necklaces and armbands, become highly differentiated and distinctive, and, where elaborated, specialized craftsmen probably became

involved in their manufacture.

The use of the valuables in display also changes with their politicization. In the Tsembaga case, the importance of an individual's regional network requires his personal display at dances to emphasize desirability as a marriage and exchange partner. With the development of leadership position in the Big Man systems (Melpa and Mae Enga) and in the incipient chiefdom (Trobriand Islanders), display becomes progressively less individualistic and more orchestrated by leaders. Display shifts progressively from individual adornment to the massive group display of valuables. This corporate display then emphasizes the economic prowess of the group and its leader, and is critical for maneuvering volatile political relationships. The character of valuables appears to shift as well away from an emphasis on gaudiness to increasing focus on durability. Although the data are only suggestive, durability seems to become more important as the political uses of valuables increase.

Probably of more importance is the changing role of valuables in trade, and the development of spheres of exchange that may be associated with the emerging political uses of the primitive valuables. Among the Tsembaga Maring, Rappaport argues that the exchangeability of valuables for utilitarian goods is essential for maintaining the free flow of necessary utilitarian goods. Although Rappaport does not phrase it in these terms, the Tsembaga valuables are of a very generalized nature, acting both as payment in social exchanges and as a rudimentary medium of exchange in trade. Among the simple acephalous Tsembaga, the absence of spheres of exchange appears highly advantageous.

With the elaboration of Big Man systems and the political use of valuables among the Melpa and Mae Enga, we can see a preliminary development of spheres of exchange. In these societies, the line between valuables and utilitarian objects is not clearly marked and some valuables were directly exchangeable for nonvaluables. However, for the Melpa at least, the shell valuables were divided into separate classes and equivalency could only be established *within* a class. This lack of established value relationships between categories is typically associated with spheres of exchange (Dalton 1965).

With the evolution of chiefs among the Trobriands, the *kula* category of valuables clearly came to represent a separate sphere of exchange with its own well-defined rules. The *kula* items are exchangeable only for each other within the ring itself. The central point here is that the spheres of exchange as described by Malinowski (1922) for the Trobriands are *not* found generally in stateless societies. I suggest that the economic/ecological function for valuables is basic to their use in simple, acephalous societies like the Tsembaga, where they are highly generalized in use. Why then should certain valuables become

less generally used and restricted to specific spheres of exchange?

Two processes that are likely to result in the formation of spheres of exchange may be suggested. First, as trade and markets expand in a region, based on their ability to be manufactured in uniform, quantifiable units, certain valuables are probably selected as media of exchange. As Bohannan (1955) noted in his discussion of spheres of exchange, a medium of exchange like currency tends to replace other valuables first in their use in trade and then in other realms. With the introduction of specialized exchange media, the more generalized valuables become restricted to increasingly narrow payment functions.

Second, and more important for the theme of this chapter, spheres of exchange may develop along with the evolution of social ranking and political leadership. Political and social differentiation are based in part on differential control of wealth, and this depends on control of production and exchange. From this perspective, spheres of exchange may be seen as ways to restrict access to key wealth items. In highland New Guinea, where social differentiation is not institutionalized and competition for leadership is largely open, spheres of exchange are weakly developed. In contrast, among the Trobriand Islands, where social ranking strongly influences leadership selection, spheres of exchange are elaborated and act to limit access to the main valuables that are important in political maneuvering. Within the *kula* ring itself, Burton (1975) has pointed out that only in the Trobriand Islands, characterized by institutionalized social ranking, are the *kula* valuables so clearly separated in exchange relations. Where standard Big Man systems are typical, the *kula* valuables are more generalized in use and exchangeability.

This association in the Melanesian examples of exchange spheres with institutionalized ranking relates to an interesting argument developed by Burton (1975) to account for the development of Trobriand chiefs. He pointed out that Trobriand chiefs are viewed as a result of the *marginal* position of the Trobriand Islands in the *kula* exchange system. Because of this marginal location, access to valuables is restricted and can be controlled by aspirant leaders. Burton contrasts the Trobriand case with the Big Man systems found elsewhere in the *kula* ring, and in highland New Guinea where access to valuables is more broad and difficult to control. From this we may infer that positive feedback relationships may exist among three conditions: restricted access resulting from geographic location, the incipient development of chiefs, and the further restriction of access by institutionalized exchange spheres.

A final question concerns how it is feasible to institutionalize exchange spheres considering the key economic function identified for the generalized exchange valuables in the Tsembaga case. For the Trobriands, exchange spheres are possible because the exchange of *kula* valuables creates a market like

interregional gathering where subsistence goods are bartered among individuals who are not exchange partners. Exchange rates can, therefore, fluctuate freely to meet the changing conditions of supply and demand and the use of valuables to buffer a system with fixed rates becomes unnecessary. In this context, elites are essential to negotiate external trade ties and to guarantee the peace of the market (compare the discussion in [Chapter 12](#)).

Some Recent Work

Since this chapter was written, important work has added to our knowledge of how primitive valuables (a.k.a. prestige goods, wealth) were exchanged over long distances in traditional societies. Friedman and Rowlands (1977) introduce the concept of "prestige-goods exchange" (see discussion in [Chapter 1](#)) to describe how these valuables functioned as part of intergroup marriages and ceremonies to build political allies and social hierarchies. Europe provided their primary historical cases, as exemplified in this volume by the Danish and English Bronze Age chiefdoms ([Chapters 12-14](#)). The broad and interrelated networks exchanging wealth across Europe created what Renfrew and Cherry (1986) call a peer-polity interaction sphere, in which local chiefs and kings emulate each others' fashions of ceremonial display or conspicuous consumption in patterns of intense competition. Hayden (1995) describes how, in the ceremonial feasting of complex hunter-gatherers, some individuals use valuables obtained through exchange to build status inequalities. Status relationships within a group can thus be established and measured by success in obtaining wealth flowing through broad interpolity networks as part of emerging political economies.

An example of prestige-goods exchange is the *tee* exchanges among the Enga of the New Guinea highlands (Feil 1984, 1987). Feil's goal is to go beyond a functional analysis to capture the broader historical and comparative contexts of the exchange of primitive valuables. Relationships are established and maintained by exchanges of the primitive valuables conducted strategically by individual agents, Hayden's (1995) "aggrandizers," who strive to make a political name for themselves. The resulting dynamic networks of commodity flows are decentralized, and change according to personal intervention and success. The elaboration of the *tee* exchanges apparently rested on the introduction of sweet potato that allowed for surplus production to support the expanded pig herds used in the exchanges. Compare this picture to the linkage of cattle production with the elaborated exchanges of wealth in Bronze Age Denmark ([Chapter 12](#)).

Another discussion concerns how exchange makes an object valuable and a person prestigious. Appadurai (1986: 3) describes how value is created in the political process of interpersonal exchanges by which objects come to have social lives—histories of ownership, transfers, and use. This social value is historically constructed, not personally or strictly locally constituted; it is an intersubjective value established in regional exchange negotiations (Munn 1983). In the *kula*, *keda* (pathways or roads of exchange) were established between individual partners and materialized in the life histories of the objects that have passed between them. Campbell (1983) describes how individuals use valuables to establish networks of exchange through which objects are channeled. The pathways were interpersonal linkages of trade partnerships, and they are known by the participants, although individuals are only personally familiar with those to whom and from whom they give and receive (Weiner 1992). These paths thus act as political structures that measure prestige across local polities, and the strategic diversion of exchange by an individual away from an established pathway offered a way to build renown. The *keda* was the route to personal wealth and power. Political relationships are made, measured, and materialized in the exchange of the objects ([Chapter 14](#)).

To understand primitive valuables, we must know how they are related socially and historically to individuals and their statuses. Is an object alienable, meaning simply can it be exchanged without significant loss in social standing? Alienable reflects characteristics of property (Earle 2000). Primitive valuables, such as the pigs, shells, and feathers of the Tsembaga and Enga, are exchanged regularly; they are commodities, alienable from one owner to another. Weiner (1992) introduced the notion of "inalienable possessions," meaning that some primitive valuables are so closely associated with an individual's status within a social structure that they cannot be transferred to others without substantial loss of social standing. The elaborate chiefly swords of the Danish Early Bronze Age ([Chapters 12](#) and [14](#)) were probably such objects and were carefully buried at death with their chief. Based on historical analogies to the Vikings, these swords were of extraordinary value and were often received directly from a high chieftain (Earle 1997). Good examples of inalienable possessions also include the Hawaiian feather cloaks and the fine Inka cloths ([Chapter 6](#)). But calling an object inalienable only increases the potential significance of its transfer for the gain (and loss) of the political operatives. The defeated warrior in Peru is shown naked, stripped of his clothing and weapons and thus stripped of his status. Primitive valuables can embody (institute) a political system, and ownership of those objects becomes contested as a means to reformulate political relationships.

Valuables flowing in prestige-goods exchanges may thus have different

characteristics related to alienability and probably to how they were manufactured as well ([Chapter 6](#)). Alienable objects are commodities. They are manufactured by independent specialists with an intention to exchange that would encourage the maker to limit costs and increase the ease of value recognition. For both reasons, commodities would tend to be quite standardized in form and execution. Inalienable objects should be special, virtually unique, making them easily recognizable and harder to fake (LeCount 1999). Such objects are typically made by specialists attached to elite patrons. The chief or lord who sponsors the production of special objects then can control their distribution as part of making political relationships.

The primary conclusion is that across cultures, primitive valuables are not everywhere the same thing. Rather their character and meaning are part of the broader political process in which they are manufactured and exchanged. Some primitive valuables are closely held by elite personages, exchanged only along established pathways of power, whereas others are produced and distributed much more openly and can result in contested and less hierarchical power relationships as discussed in [Chapter 12](#). As we see in the three cases discussed in this book, the instituting of production and exchange of wealth within the political economy offers a potential pathway to power, but they are contingent on broader political and economic relationships of the society.

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Chieftdoms in Archaeological and Ethnohistorical Perspectives

The term chieftdom is used to characterize social complexity in stateless societies. Despite pointed criticism of evolutionary typologies, the chieftdom and related formulations provide a framework for comparative studies of evolution aimed at understanding the development of central decisionmaking hierarchies and social inequalities. Over the past ten years, our understanding of chieftdoms has fundamentally changed as a result of substantial historical and archaeological studies. Research has shifted away from schemes to classify societies as chieftdoms or not, toward considerations of the causes of the observed variability. As the details of analysis have sharpened, the basic concerns with economy and adaptation have broadened to consider political and ideological matters. This review seeks to capture an emerging consensus on the nature of chiefly societies and the causes of their evolution.

Chieftdom as Evolutionary Type

Chieftdoms are intermediate-level societies, providing an evolutionary bridge between acephalous societies and bureaucratic states (Johnson and Earle 2000). As the term is presently used, most view chieftdoms as political entities that organize regional populations in the thousands or tens of thousands (Carneiro 1981). The organizational structure is provided by a centralized hierarchy of leaders set off from the rest of the population. Sociopolitical differentiation creates certain dynamics of competition, management, and control that underlie the eventual evolution of the state (Carneiro 1981; Earle 1978; Friedman and Rowlands 1977).

The original conception of chieftdoms and its historical development are discussed in recent reviews (Carneiro 1981; Feinman and Neitzel 1984; Spencer 1987). Feinman and Neitzel (1984) summarize the different formulations of intermediate-level societies and show how they relate to each other. The chieftdom type is considered quite variable and is subdivided by different schemes—theocratic, militaristic, and tropical forest chieftdoms (Steward and Faron 1959); group oriented and individualizing chieftdoms (Renfrew 1974);

stratified and ranked societies (Fried 1967; Sanders and Webster 1978); paramountcies, ranked, and nonranked chieftains (Taylor 1975); and simple and complex chiefdoms (Carneiro 1981; Earle 1978; Steponaitis 1978; Wright 1984). Within Polynesia, Sahlins (1958) recognized four levels of stratification, and Goldman (1970) associated similar groupings with structural changes in status rivalry. The plethora of schemes would appear to confuse our present understanding (Feinman and Neitzel 1984).

Devastating criticism of the original formulation of the chiefdom has made it something of a "dirty word" (Flannery 1983; Spencer 1987). Part of the dissatisfaction stems from its place in the evolutionary typologies of the 1960s. Now many scholars assert that such typologies obscure both the variation within the types and the evolutionary changes between them; instead of classification we are exhorted to study process by investigating the relationships between variables broken down into specific dimensions of variability (Blanton et al. 1981; Cordy 1981; Dunnell 1980; Feinman and Neitzel 1984; Lewis 1968; Linares 1977; McGuire 1983; Plog 1977; Plog and Upham 1983; Smith 1982; Upham 1987). Attempts to classify societies into the evolutionary types based on the diagnostic traits of the 1960s, sometimes called "check-list archaeology" (Kristiansen 1984), is seen as unproductive.

Along similar lines, the implied notion of progress through a unilinear sequence of stages is criticized as an outmoded version of nineteenth-century evolutionism, without an adequate selective mechanism for change (Dunnell 1980; Rindos 1985; Wenke 1981). The need is rather for specific studies of culture change and adaptive radiation (Flannery 1983; Kirch 1984).

One would seem ready to conclude that the chiefdom and all evolutionary typologies have outlived their usefulness and should be jettisoned. But though the term chiefdom has lost favor, the concept is often retained with little more than a change of names (Spencer 1987). An evolutionary typology appears necessary to control for cross-cultural comparisons, and the type chiefdom is useful to define societies of generally similar scale and organization. Because societies at different scales confront different organizational problems and possess different properties and dynamics, such typologies are fundamental to selecting appropriate cases for comparison (Wright 1984). Similarly analogies used in archaeological interpretation must be evaluated for fit along several dimensions of similarities; comparability in evolutionary level would certainly be one of these dimensions.

In defense of the chiefdom, typology can be seen as fundamental to scientific inquiry; appropriateness of a typology can only be measured by the precision required in a particular study (Spencer 1987). In an early cross-cultural study of stateless societies, Cohen and Schlegel (1968) differentiated chiefdom-level societies on the basis of various traits. Within chiefdoms

significant patterning is evident in the cross-cultural work (Drennan and Uribe 1987; Feinman and Neitzel 1984; Upham 1987).

A final point of concern on the utility of the chiefdom concept centers on the relative importance of qualitative vs. quantitative change. The original chiefdom type as conceived by Service was certainly qualitatively different from tribes and states in its institutions and structuring principles. Much of the attack on chiefdoms, however, stresses the need for continuous scales, as discussed above. The most recent cross-cultural synthesis argues for continuous change (Johnson and Earle 2000).

Others instead see major qualitative change with the creation of new levels of decisionmaking (Flannery 1972). Within an organizational system, stresses build up quantitatively until they overwhelm the decisionmaking apparatus; at this point the system may collapse or develop a new decisionmaking level. This position of quantitative into qualitative change is now broadly accepted (Carneiro 1970; Cordy 1981; Johnson 1978; Spencer 1987; Wright 1977). This implies a punctuated rather than a gradualist conception of cultural evolution.

The very nature of selection may change with the evolution of chiefdoms. In egalitarian societies, selection takes place at the individual and community level (Peoples 1982); in chiefdoms, since a broad intervillage political system has been created, selection may shift to this new level of integration (Dunnell 1980; Spencer 1987). The new scale of integration effected the competitive exclusion of simpler societies; chiefdoms may thus be rapidly selected for as they expand by exclusion and incorporation (Carneiro 1978).

Important Area Studies for Chiefdoms

Service (1962, 1978) describes the worldwide distribution of chiefdoms. Areas that dominated discussions include Polynesia, circum-Caribbean, American Southeast, and Europe.

Oceania

The concept of chiefdom originally relied substantially on Polynesia (Sahlins 1958, 1963; Service 1962). Polynesia with its rich historical and archaeological materials has continued its importance with recent syntheses (Cordy 1985; Goldman 1970; Jennings 1979; Kirch 1984) and case studies (Cordy 1981; Earle 1978; R. Green 1980; Hommon 1976, 1986; Jennings 1979; Kirch and Kelly 1975; Kirch and Yen 1982; Sutton 1987). This work has been influential in our

reinterpretation of the role of demography (Cordy 1974, 1981, 1985; Kirch 1984), intensification with irrigation ([Chapter 5](#); Kirch 1977, 1984), redistribution ([Chapter 4](#)), status rivalry (Earle 1978; Goldman 1970; Kirch 1984), prestige-goods exchange ([Chapters 1](#) and [2](#); Friedman 1981; Kirch 1986), and ideology ([Chapter 7](#); Peebles and Kus 1977). The work in Polynesia still leads our understanding of chiefdoms, although increasingly the uniqueness of the Polynesian material is mentioned. Recently Polynesian studies have used archaeology to investigate long-term culture change (Cordy 1981; Kirch 1984; Stevenson 1986).

In Micronesia, comparable work includes cross-cultural comparisons of the relationships between population, polity size, and social complexity (Cordy 1985, 1986), and studies of competition (Gumerman 1986; Masse et al. 1984) and exchange as a response to high risk in the subsistence economy (Alkire 1965).

In Melanesia, studies of leadership and incipient chiefdoms provide critical evidence for the continuity between Big Man systems and chiefdoms (Douglas 1979; Lilley 1985). Sahlins (1963) used Melanesian ethnography in contrast to Polynesia to create his ideal types. Big Man systems were said to be highly competitive; charismatic leaders achieve leadership through calculated manipulation of interpersonal relationships, thus creating a highly dynamic political landscape. In contrast, chiefdoms were said to be structured political systems in which an individual's rank is ascribed by his genealogical position. A person comes to power by ascending to the proper office accorded his rank. As has been shown for both Polynesia and Melanesia, ascribed and achieved statuses are never alternatives (Douglas 1979). Rather in Melanesia, rules of succession clearly exist (Douglas 1979), and in Polynesia competition for office was characteristic of many cases (Goldman 1970; Sutton 1987). Terrell's (1986) analysis of the spatial organization of Big Man systems shows a definite settlement pattern hierarchy, a pattern generally thought to indicate political centrality.

Work on exchange in Melanesia also has been extensive. The tie between exchange and emerging inequality is discussed for the Trobriands ([Chapter 2](#); Burton 1975); equally important are the conditions under which extensive exchange does not result in inequality (Irwin 1978). Spriggs (1986) discusses Friedman's (1981) model of prestige-goods exchanges as it relates to island chiefdoms in Melanesia ([Chapter 1](#)).

Circum-Caribbean and Lowland Amazonia

The circum-Caribbean chiefdoms provide case material of extensive interpolity

contacts that existed over a broad arena. Work includes historical (Dennis and Oliens 1984; Helms 1979, 1981a, 1986) and archaeological studies (Creamer and Haas 1985; Drennan 1985; Linares 1977; Snarskis 1987). The work of Helms (1979) on Panamanian chiefdoms has been particularly influential. Noting that many chiefdoms were involved in long-distance exchange of special objects, she argues that chiefs competed for esoteric knowledge derived from afar. Access to such special goods documents foreign relations that search out this knowledge of supernatural powers. Using historical material from Colombia, Carneiro (1987) has elaborated his earlier argument with respect to the role of warfare in the evolution of chiefdoms (Carneiro 1970, 1978). Evidence for warfare is well documented (Drennan 1985; Linares 1977; Roosevelt 1980).

Another question of considerable interest is whether the poverty of tropical forest soils limits the development of complex society (Meggers 1954). Along the Amazon and Orinoco Rivers, the chiefdoms were originally thought to result from immigration into the region by already complex societies; however, chiefdoms apparently developed here following the introduction of maize agriculture and a shift to intensive farming of the alluvial soils (Roosevelt 1980).

Within Central America considerable variation exists in the level of sociopolitical development. Several studies evaluate the evolutionary status of these societies. For the Miskito, kingship is said to result from the middleman role played for the British by existing chiefs (Dennis and Oliens 1984). These chiefs ("kings") were hereditary, a major criterion of Sahlins's chiefdom, and adopted the term king from the British. These "kings" can perhaps better be seen as a political myth used to legitimize weak leadership (Helms 1986); no evidence for offices with real power exists to substantiate the titles. The Miskito were more likely organized by rivalrous Big Men, a conclusion that fits well with the small scale of their polities. The role of borrowed terminology to legitimize political position is critical to recognize in historical studies.

Using archaeological evidence, a recent, sophisticated trait list is used to differentiate chiefdoms and tribal systems in two regions—Central Panama and the Gulf of Nicoya (Creamer and Haas 1985).

North America

Historic and prehistoric cultures of North America provide a wide range in social complexity that is ideal for studies of chiefdoms. Both historical and ethnographic materials have been used in recent cross-cultural work (Feinman and Neitzel 1984; Upham 1987). The main work on chiefdoms has focused on the archaeological evidence of Mississippian societies, recently reviewed

(Smith 1986; Steponaitis 1986). Little doubt exists that these are chiefdoms, although they exhibit important variability in time and space. Most relevant work has dealt with settlement pattern and burial information. The settlement data from several large projects are rich for studying variation in population density, settlement hierarchy, and population aggregation (Bareis and Porter 1984; Larson 1972; Milner 1986; Morse and Morse 1983; Smith 1978). The settlement hierarchy is clearly distinguished by one to three levels of central places recognized by size, population, and investment in monumental construction. At times of maximal regional integration, much of the population resided in scattered hamlets (Muller 1978; Peebles 1978); with a breakdown in the integration, population aggregated into defensive settlements (Morse and Morse 1983). Steponaitis (1978) analyzed the distribution of settlements around the impressive center of Moundville to illustrate how settlement placement may be a response to the energetics of tribute collection.

Burial pattern data have also been used to study status differentiation in Mississippian Society. Ranking at Moundville was based on the differential distribution of special objects; high-status burials were restricted to the immediate vicinity of the site's mounds (Peebles 1971, 1983). Brown (1981) contrasts the rigid status system seen in the burial practice of Spiro-Phase Caddo with the more open systems of the Harland-Phase Caddo.

Stylistically, Mississippian Culture is associated with the Southern Cult, a unifying elite iconography manipulated by an emerging ruling sector (Brown 1976). Over considerable distances, similar styles link up the status-defining artifacts of interacting polities, although considerable variability exists locally in the expression of this set of special artifacts ([Chapter 7](#)). Chiefly polities appear to have created broad provinces of peer-polity interaction (DePratter 1983).

An analogous pan-regional pattern of interaction existed earlier during the Hopewellian period. Struever and Houart (1972) analyze the Hopewellian interaction sphere as involving "regional transaction centers" with substantial mound groups. Elites at these centers are seen as acting as redistributors of prestige goods that included objects of native copper, galena, meteoric iron, obsidian, and mica. Although the settlement hierarchy, planned layout of centers, and the central flow of prestige objects would seem to suggest a chiefdom organization, Ford (1974) argues for a lineage-based society with Big Men "manipulating nonessential economic resources for influence and power in keeping with their kinship responsibilities." Thus ended serious consideration of Hopewell as comprising chiefdoms (Smith 1986). I feel that this assessment deserves reconsideration. However, a recent analysis of Hopewellian interaction spheres interprets the society as basically egalitarian; increased subsistence risk made broad-scale interaction necessary to buffer the

population (Braun 1986). Following a revised adaptationist stance, "the stylistic standardization [of Hopewell] and imitations arose as part of the development of structure and symbolic redundancy in exchange relationships" (Braun 1986). Burial data indicate a status gradient related to dynamic access to status positions (Brown 1981).

Evidence from the site of Poverty Point might push the beginnings of chiefdoms in the Southeast back to 1500 B.C. (Gibson 1974), although this conclusion is not generally accepted (Johnson 1980). Evidence includes a settlement hierarchy, organized labor in mound construction, and specialization and exchange in special objects.

While never explicit, reluctance to accept the complexity of Poverty Point may stem in part from its subsistence base on wild resources, but a reevaluation of complexity among hunter-gatherers is under way (Miller and Eastman 1984; Price and Brown 1985; Tooker 1983). For some time the fishers of the Northwest Coast have been recognized as having a ranked society; however, the lack of regional organization (Drucker 1983) makes many reserved in calling them chiefdoms (Johnson and Earle 2000; Sterns 1984). Within groups, social hierarchies were carefully measured and evaluated according to genealogy, wealth, and prestige. In part, the social differentiation depended on control over social exchanges of wealth within and between communities (Bishop 1983). Other elements in social differentiation appear tied to ownership of capital technologies that include fish weirs and drying racks used in the intensive exploitation of anadromous fishes (Johnson and Earle 2000), and perhaps to the ownership of slaves obtained in war (Ruyle 1973). The potlatch and the associated prestige economy have frequently been linked to management of a risky subsistence economy (Ames 1985; Johnson and Earle 2000; Netting 1977; Suttles 1968). Other cases of social complexity among hunter-gatherers have been discussed for North America (Hayden et al. 1985; King 1978).

The evolution of social complexity has received considerable attention in the American Southwest. Ethnographically these cultures have been viewed as egalitarian; however, recent archaeology disputes this characterization. Between A.D. 900 and 1200, Chaco Canyon became the center of a complex chiefdom characterized by large multistory pueblos, central ceremonial complexes, irrigation, and an extensive road system (Crown and Judge 1991). In addition to the justly famous roads that document a regional organization, evidence for the complicated problem of labor organization in large pueblo construction has been described; for example, thousands of large trees were felled for beams and moved over 75 km in short-term construction episodes at Chetro Ketl (Betancourt et al. 1986). During the fourteenth century, aggregation of population into large settlements such as in the Chavez Pass

appears to be associated with the development of social ranking and regional organization (Upham 1982, 1983). Recently this interpretation of social complexity in the Southwest has been questioned (Hunter-Anderson 1986). The chiefdom concept has also been used to interpret the sociopolitical organization of early seventeenth-century Iroquois (Noble 1985).

Europe

From the Neolithic up to the expansion of the Roman Empire, much of Europe was organized at a chiefdom level (Mann 1986; Renfrew 1973, 1974, 1976; Shennan 1982a; [Chapter 13](#)). This allows anthropologists to view the dynamics of chiefdoms over several thousand years with different economies, patterns of regional interaction, and ideologies. Some of the earliest archaeological work on chiefdoms dealt with the megalithic cultures of Europe (Renfrew 1973). The monuments themselves, such as the British henges, indicate considerable central direction of labor. The monuments were often laid out along lunar and solar alignments, representing a symbolic use of the heavens (Ruggles and Whittle 1981). Somewhat unexpectedly, perhaps, these monuments were not associated with social differentiation in wealth in the burials; this has led to the notion of a "group-oriented chiefdom" (Renfrew 1974) in which leaders served group rather than individual interests.

The beginnings of social centralization and differentiation would seem to extend back into the Early Neolithic. At this time marked, although graded, differences in grave goods existed in Denmark (Randsborg 1975). In England, causeway camps enclosed by sizable earthworks served ceremonial functions during the Early Neolithic; impressive earthworks associated with the cursus monuments date to the Middle Neolithic (Bradley 1984, 1986; [Chapter 13](#)). By the Late Neolithic, as indicated by the broad uniformity in style in ceremonial ceramics and the similarities in layout of the henge monuments, regional interaction connected widely separate areas on the British Isles.

During the Copper and Bronze Ages, some dramatic changes in social differentiation took place throughout Europe ([Chapters 12 and 14](#)). Whether in burials or hoards, wealth in metal and other special objects became used to distinguish personal status (Bradley 1984; Levy 1979, 1982; Randsborg 1974), leading to the label "individualized chiefdoms" (Renfrew 1974). The cause of this change is under discussion. Minimally it involves a shift in iconography as objects obtained from afar (such as bronze and amber) or copied after foreign objects (the Bell Beakers) became the major status markers (Kristiansen 1982, 1984, 1987; Rowlands 1980; Shennan 1982b, 1982c).

During the Iron Age, population aggregated in hill forts, often of

considerable size. Evidence for regional organization is based on a settlement hierarchy; considerable storage was also concentrated at these settlements (Cunliffe 1978; [Chapter 13](#)). At least some argument can be made for a simplification of society, reflected in a lack of wealth differentiation in the burials; alternatively, a change in the nature of competition resulting from a nonexpanding economy may simply have changed the use of display in the burial ritual (Randsborg 1982). The development of social stratification in certain areas of Europe has been linked to economic ties with the complex societies of the Mediterranean world, which may have received both slaves and mercenaries from central Europe at this time (Brandt and Slofstra 1983; Champion and Megaw 1985; Wells 1980). The relations with the civilized world have been interpreted from the perspective of world systems theory (Frankenstein and Rowlands 1978). The chiefdom organization in Celtic Europe has been synthesized from historical accounts (Crumley 1974).

Following the collapse of the Roman Empire and the associated demographic collapse, the European world reverted to a chiefdom level of organization (Biddick 1984; Hodges 1982). Through the Dark Ages, the evolutionary changes that took place offer a dramatic case of the development of states out of chiefdoms (Johnson and Earle 2000; Randsborg 1980). Colonized from Scandinavia at this time, Iceland was a stratified society in which the linkages between status competition, wealth display, and external trade have been clearly described (Durrenberger 1992).

Precursors to States

The evolutionary conception of chiefdoms is that they precede and presage the evolution of state societies (Carneiro 1981; Earle 1978). To evaluate this proposition, the prehistory of the core areas of state formation is critically important. In Mesoamerica, prestate societies have been extensively studied for the Formative Period (Feinman et al. 1985; Flannery 1976; Flannery and Marcus 1983; Hirth 1984; Sanders and Price 1968). The Olmec culture, often viewed as Mesoamerica's first civilization and the foundation for all later developments, probably comprised complex chiefdoms (Earle 1976; Sanders and Price 1968). The settlement pattern is dominated by several independent centers that contain planned mound complexes, monumental art, and elite residences (Drucker 1981; Earle 1976; Heizer 1960). Construction required major expenditures of labor, specialist craftsmen, and central design. The description of the Olmec as a "theocratic state" by some emphasizes the religious basis of central authority (Drucker 1981; Heizer 1960); however, this assessment really emphasizes the general nature of the leadership that

characterizes complex chiefdoms (Chapter 7; Earle 1978; Wright 1984).

In the Olmec the basis of social differentiation appears to have been control over fertile alluvial land (Coe 1974), and over long-distance trade in prestige goods that included jade and jet mirrors (Chapter 7; Drennan 1976; Flannery 1968, 1976). Elsewhere in Mesoamerica, a variety of chiefdom-level societies developed largely independently of the Olmec, and then became linked up through long-distance exchange involving both material objects and esoteric knowledge represented iconographically (Chapter 7; Drennan 1976; Flannery 1968; Harland 1979; Hirth 1984). The dramatic Olmec style demarcated the local elites (Grove 1984; Pyne 1976) and empowered sacred architecture (Grove 1984).

In an influential paper on cultural evolution, Sanders and Webster (1978) argue that the chiefdom concept should be kept analytically separate from stratified societies that are the characteristic precursors to state development. The Olmec developed in the tropical forest environment where population density was comparatively low so that large-scale polities were necessarily extensive; this situation is in contrast to the Valley of Mexico, where a much higher population density dependent on irrigation permitted the same scale of society in a much smaller territory (Earle 1976). The different environmental conditions, economies, and patterns of regional interaction create divergent opportunities for development. Following state formation in Mesoamerica, chiefdoms appear to continue at the margins. Linked by trade into the core areas, these cases, such as Kaminaljuyu, offer contrasting patterns of social development (Michels 1979).

Outside of Mesoamerica, less is known of the development of chiefdoms prior to pristine state formation. In the Andes, the Formative Period appears to follow a similar trajectory to Mesoamerica, although rarely discussed in evolutionary terms (Lanning 1967; Lumbreras 1974). Local chiefdoms, identified by monumental construction and a settlement hierarchy, developed on the coast and in the highlands, and then became linked together with an iconography commonly described as Chavin. The initial development of chiefdomlike societies took place on the coast in the Late Preceramic period (2500-1800 B.C.), possibly based on a maritime (nonagricultural) economy (Moseley 1975), or alternatively on floodwater farming with maize (Wilson 1981). The elaboration of monumental architecture and evidence for social differentiation in the burials date to the Initial period when population moved inland and became dependent on irrigated farming (Lanning 1967; Pozorski 1980). The impressive ceremonial complex at Caballo Muerto, with monumental construction and art, precise architectural symmetry, and restricted access to sacred areas, illustrates these Initial period developments (Pozorski 1980).

In Mesopotamia, the 'Ubaid and Uruk can probably be associated with chiefdoms. Wright (1984) argues that Susa was a complex chiefdom on the basis that it had monumental construction and a generalized hierarchy of decisionmakers; Hole (1983) notes the emphasis on religion there and the lack of economic differentiation in the burials.

Africa

Despite the potentially useful historical and archaeological data base on stateless society in Africa (Forde and Kaberry 1967; McIntosh and McIntosh 1983), little work has been done on chiefdoms there because of a long-standing avoidance of evolutionary concepts by British social anthropologists. In their famous review of African political systems, Fortes and Evans-Pritchard (1940) dispute potential evolutionary interpretations of political complexity. R. F. Stevenson (1968), however, shows that their work failed to consider historical changes, and argues for an evolutionary relationship between population density and political complexity. Taylor (1975) provides an important comparative study of chiefdoms using African societies. Netting (1972) emphasizes the importance of dispute settlement in the development of African chiefs.

Defining Characteristics of Chiefdoms

The main defining characteristics of chiefdoms are scale of integration, centrality of decisionmaking, and stratification. Each should not be thought of as a quality that can be said to be present or absent, but as a set of interrelated variables.

Scale of Integration

Chiefdoms are probably best defined as regionally organized societies with a centralized decisionmaking hierarchy coordinating activities among several village communities (Carneiro 1981; Earle 1978; Flannery 1972; Johnson and Earle 2000; Service 1962). Polities vary in size from simple chiefdoms integrating populations of perhaps a thousand to complex chiefdoms with populations in the tens of thousands (Steponaitis 1978). Many of the societies used by Feinman and Neitzel (1984) have been called chiefdoms because of hereditary ranking; however, their small sizes, often below a thousand, would

perhaps make it best to consider them as variants on the local-group level (Johnson and Earle 2000).

Generally, increased polity size correlates with increasing political complexity (Carneiro 1967). For Polynesia, Sahlins (1958) demonstrated a good relationship between "productivity" and sociopolitical complexity; his measure of productivity was primarily the size of the redistributive network, a good indicator of polity size (Freeman 1961). Subsequent research supports this relationship between polity size and complexity (Cordy 1985, 1986; Feinman and Neitzel 1984; Kirch 1984; Upham 1987). This correlation is said to derive from scale problems in decisionmaking (Johnson 1978) and the increased energy flow centrally channeled from the larger population (Earle 1978).

Related factors that intervene are population density and its spatial concentration. Population density affects the cost of integration and control at any specified scale (Upham 1987). Therefore the different territorial size for societies at the same scale may result in quite different trajectories (Earle 1976; Gamble 1982). Population concentration has been represented as the percent age of an area's population living at the largest settlement (Drennan 1987). Chiefdoms apparently represent a continuum in the concentration of population (Sanders and Price 1968; Smith 1978) from dispersed hamlets with centers (Earle 1978; Muller 1978) to concentrated populations in urbanlike settlements (Crumley 1974; Cunliffe 1978; Morse and Morse 1983). Drennan (1987) compares the different trajectories in three areas of Mesoamerica with different population dispersion patterns.

To estimate polity size requires an estimation of population within a recognized territory. Although measurement of population can be difficult, it has been reviewed elsewhere (Schacht 1984); here I concentrate on determining territorial extent of polities. The simplest procedure is to divide up space around central places using Thiessen polygons (Renfrew 1976). Lower-ranked settlements are assigned to centers on the basis of proximity; and boundaries are often visible as buffer zones of low settlement density (Cordy 1981; Earle 1976). For purposes of administration, tribute collection, and control, settlements can be expected to cluster toward the centers (Steponaitis 1978). Political boundaries were sometimes marked by physical features such as the earthen reaves of Dartmoor (Fleming 1979, 1982).

Centrality of Decisionmaking and Coordination

As introduced above, the number of levels in the decisionmaking hierarchy is strongly correlated with the polity size and its spatial distribution. Most simply stated, as polity scale increases, the number of decisions required by any node

increases until it exceeds an individual's personal capacity to make decisions and requires an expansion in the hierarchy of decisionmakers (Flannery 1972; Johnson 1978; Peebles and Kus 1977; Spencer 1987; Wright 1977). In chiefdoms the number of levels in the hierarchy corresponds with the scale of the polity, although the exact relationship is affected by intervening variables (Cordy 1981, 1985, 1986). The chiefly hierarchy is set apart as specialized leadership but internally it is undifferentiated as to function. Chiefdoms thus are highly generalized leadership systems in which the different levels have similar duties, such that they are potentially independent (Barnes 1987; Earle 1978; Spencer 1987; Wright 1977). As a result, any delegation of authority is potentially complete, effectively setting an upper limit on the physical size of chiefdoms. The regional organization would seem to be highly unstable.

By whatever means, the chiefs are central directors, and centrality is the clearest indicator of chiefdoms (Renfrew 1973, 1982; Renfrew and Shennan 1982). A settlement hierarchy is perhaps the most frequently used indicator of chiefdoms (Creamer and Haas 1985; Gibson 1974; Hayden et al. 1985; Lightfoot 1983; Peebles and Kus 1977). Because of the intense competition that characterizes prestate societies, in order to be politically viable, smaller settlements within a region must be subservient to larger settlements; for any region the central settlements of competing polities should be of approximately similar sizes.

The labor invested in the monumental construction at the centers is used as a measure of the group size that is organized centrally (Heizer 1960; Peebles and Kus 1977; Pozorski 1980; Renfrew 1973); it measures the surplus mobilized (Price 1984). Some, however, dispute the significance of such calculations because comparatively simple organizations are thought able to build substantial monuments by small labor expenditures over long time frames (Erasmus 1965; Ford 1974; Muller 1987). The time span of construction is important because small groups over long times can produce the same total investment as large crews over short periods. The number of building episodes of a monument helps estimate the size of the labor crews used (Pozorski 1980).

Perhaps equally important to the labor invested in construction is the degree of planning evidenced. At centers such as the Olmec site of La Venta, an overall plan for the central monuments is unambiguous evidence of both the continuity and centrality in labor organization (Drucker 1981). Related analysis at centers can also include studies of the functional differentiation and restricted access in public buildings (Drennan 1983; Flannery and Marcus 1976; Pozorski 1980).

Stratification

Attempts to separate ranking (structural differentiation) from stratification (economic differentiation) are common (Fried 1967); however, many now argue that these are best conceived of as a continuum. Political differentiation cannot be strictly symbolic but must derive from economic control (Webster 1975). It is hard to imagine chiefs as the centers of redistributive systems without this being reflected in real economic advantage (Price 1984). Political and structural differentiation must thus be linked to economic differentiation. Chiefs are an incipient aristocracy with advantages in wealth and lifestyle (Goldman 1970). The notion of chiefdoms as highly structured status systems unrelated to competition for economically based power appears to be unfounded.

Stratification can be thought of in qualitative terms, in which a segment of society is distinguished by rank and status. Using historical material Sahlins (1958) and Cordy (1981, 1986) identify what they see as discrete levels in social hierarchy. To some measure this may be possible archaeologically by identifying specific symbols of status that cross-cut other dimensions of achieved status (Sahlins 1963). The elaboration of clear status markers correlates well with other measures of social complexity (Feinman and Neitzel 1984).

Alternatively, stratification can be measured in terms of differential access to goods indicative of differential control over the economy. Burials have been used frequently to measure social and economic differentiation (Chapman et al. 1981; Randsborg 1974, 1975; Shennan 1975, 1982a; Tainter 1973, 1976; Tainter and Cordy 1977; Willems 1978). Analyses of wealth distribution in burials typically make least-effort assumptions about human ritual behavior (Brown 1981); the energy invested in the burials is thus thought to reflect fairly closely the economic position of the dead individuals.

Problems with such assumptions have often been noted. It is now generally accepted that no isomorphic relationship exists between interred wealth and socioeconomic status. "The trap lies in identifying and correlating directly the actors' concept of these groups, the distinctions and associations made in the emic system, with the interest groups identified by analysis of the political and economic structures" (Bloch 1977). A dialectic exists between social status and economic position with "the misrepresentation of power in rank" (Bloch 1977). In essence, an ideology of hierarchy as represented in distinguished burials may derive from economic relationships but comes to take on a dynamic of its own not necessarily related to immediate economic relations (Kirch 1980). Two periods of similar social differentiation can thus have different burial practices: With expanding economies and flexible social hierarchies in northern Europe, active competition for advantage was manifest in large offerings in burials; however, during periods of economic contraction, competition was less manifest and burials were not as differentiated in wealth (Randsborg 1982).

The simple expectations of contrast between egalitarian and hierarchical societies mask the variability seen archaeologically (Rothschild 1979). An obvious problem is that only single ritual events, or at least related events, are represented, and competition through wealth display and consumption need not necessarily be concerned.

A more reasonable differentiation of wealth and social inequality can be made with an analysis of energy invested in residential housing (McGuire 1983; Plog and Upham 1983; Price 1978). Chiefs can be differentiated cross-culturally by the size, construction, and location of their houses (Feinman and Neitzel 1984). "Architecture is built by social groups ... it can be expected to reflect the number, type, and interconnection between such groups as well as their wealth" (Cordy 1981). In essence, housing involves a daily use and display function much more likely to represent economic and political relationships than burials. Measurement of size and energy invested in housing has been used to delimit the development of social stratification in Hawaii (Cordy 1981). Elite housing can also be identified by the concentration of special goods including foreign objects (Chapter 11; Earle et al. 1987; Flannery 1976).

Health status also measures differential access to economic resources that translates into differential survival and reproductive success (Price 1984). Preliminary osteological work (Hatch 1987; Peebles 1983; Peebles and Schoeniger 1981) indicates differences in diet and health between elites and commoners in chiefdoms. Surprisingly perhaps in one comparative study the differences between elites and commoners was greatest in simpler chiefdoms in which the scale of integration is less; the established regional peace of complex chiefdoms appears to benefit the health of all (Hatch 1987).

The Economic Bases of Chiefdoms

Virtually all those attempting to understand the evolution of chiefdoms stress the importance of the society's economic foundations (Earle 1997). The chiefdom was viewed originally as an economically centralized organization, a "redistributional society" in fact (Service 1962). The precise linkages between economic and political centralization are debated. The first debate has been over the relative importance of management and control as the economic foundation for chiefly societies (Service 1978). Of those emphasizing control, the presently favored position, a second debate is over whether control derives primarily from staple production or wealth distribution.

Management

In his influential definition of chiefdoms, Service (1962) argued that the regional organization and central management of chiefdoms resulted from sedentarization in ecologically diverse regions that caused local community specialization, exchange in staple products, regional intradependency, and the development of regional chiefs to coordinate the central exchange (redistribution) of the local specialties and to maintain the regional peace on which the economy and society depended. This model of chiefdoms was apparently based on Polynesia, where high environmental diversity and redistribution were found together (Sahlins 1958). Service's elegant argument was a mainstay for the ecological functionalism of the 1960s, and it was frequently cited as a basic trait of chiefdoms (Gibson 1974; Renfrew 1973; Sanders and Price 1968).

On close examination, however, the systems of redistribution were shown not to handle staple distribution between communities, because the communities themselves were highly generalized and largely self-sufficient in staple goods ([Chapter 4](#); Earle 1978; Finney 1966). In retrospect this finding should not perhaps have been surprising. Initially the notion of redistribution was put forward by substantivists (Polanyi 1957) to show that the same economic activity (staple exchange) could be handled by various mechanisms according to the institutional framework of the society. Redistribution is, however, an unlikely candidate for staple exchange. Given logistical problems, it is unlikely that chiefs could ever have acted to organize staple production and distribute local products. Redistributive ceremonies take place too infrequently, only a few times a year, to handle the daily consumption needs of households. Rather, in those chiefdoms with redistribution, it served as a system of finance, a means to mobilize staple goods to provide for public feasts and to feed chiefs' attendants ([Chapter 4](#)). The notion of chiefdoms as an interdependent set of specialized communities has been dismissed ([Chapter 4](#); Feinman and Neitzel 1984); Peebles and Kus (1977) even suggest that generalized community economies characterize chiefdoms.

An alternative managerial theory for the evolution of chiefdoms emphasizes the role of chiefs in the construction and repair of irrigation complexes (Fried 1967; Service 1962). Wittfogel (1957) used Hawaii as a central case in his theory on the hydraulic basis for the evolution of the state. As used in the 1960s, the hydraulic theory presented a simple adaptational linkage—in dry environments, agricultural intensification caused by population growth necessitated the development of irrigation, which in turn required central management by chiefs (Earle 1978).

The link between irrigation and chiefdoms was never emphasized because

most historic chiefdoms did not use irrigation. Reanalysis of the Hawaiian case reaffirmed the linkage of irrigation to chiefly development but largely dismissed the managerial aspect of the theory ([Chapter 5](#); Earle 1978; R. Green 1980; Kirch 1977). Few now favor a managerial theory of irrigation, although occasional reference is made to the managerial needs of intensive agriculture (Roosevelt 1980; Upham 1983); Spriggs (1986) notes that the larger irrigation systems once in place required a regional polity to maintain the peace necessary for their operation.

Warfare is an additional problem identified as requiring the central management of chiefs. Warfare is certainly a general characteristic of chiefdoms (Carneiro 1981, 1987). As discussed by Carneiro (1970), competition over land caused by population growth would put a premium on centrality—that is, only the strong (the centrally organized) survive (Carneiro 1978). Intense warfare characterizing stateless societies may favor regional chiefdoms, which make the warfare more predictable and less devastating to local populations (Steponaitis 1983). Alternatively, since labor (not land) is the limiting factor to production in early hierarchical societies (Feinman and Nichols 1987), warfare may switch from confrontations aimed at grasping new lands to wars of conquest geared to capture new populations (Earle 1978).

The only managerial theory to retain broad support has been the suggestion that chiefs handle risks caused by intensification. Malinowski (1935) referred to chiefs as tribal bankers, who handle risks for their supporters. In the American Bottoms, a shift to maize agriculture on the alluvial soils probably increased productivity at the same time that it increased the vulnerability of fields to flood damage. Chiefs may have then provided critical storage and distribution functions to support periodically disrupted populations (Muller 1987; Peebles and Kus 1977; Steponaitis 1981). Similar arguments have been proposed for the interisland exchange in Micronesia (Alkire 1965), for Hopewellian exchange (Braun 1986), for Hawaiian irrigation (Earle 1978), and for intensive agriculture, aggregated settlement, and regional exchange in the American Southwest (Lightfoot 1983; Upham 1982, 1983). Although logically attractive, the failure of other managerial theories makes me doubtful of the value of risk as a causal factor. Although storage, for example, may serve to buffer households against risks, its centralization by chiefs serves little clear advantage to households and would seem rather to show a co-option by the chiefs as part of a developing system of finance ([Chapter 8](#)).

This point about storage suggests a more general issue. Intensification and related changes in the subsistence economy do create problems requiring management, but low-level management would seem in most instances best for the local population. Such management can be expected to be responsive to the needs of the population in contrast to a distant, regional chiefly hierarchy

that would be more inaccessible and unaccountable for their actions.

Control

The alternative theories used to explain the evolution of chiefdoms emphasize the way elites emerge by controlling the economy (Earle 1997; [Chapters 12 and 13](#)). Control derives from differential access to productive resources (Fried 1967) and/or to exchanged wealth, both of which permit the channeling of energy flows (Price 1984) and control over labor (Friedman and Rowlands 1977; Rowlands 1980). In this light, the evolution of social complexity is seen as dependent on the mobilization and use of surpluses to finance the emerging elites and their associated institutions. The process underlying the progressive centralization of energy flows would appear linked inexorably to the competitive dynamics of chiefdoms (Earle 1978; Friedman and Rowlands 1977). Emerging leadership, limited to a small fraction of the population, carries advantages of respect, reproductive success, and increased living standards. Competition for the positions of leadership requires a maximizing economic ethic; the coming to and retention of leadership require the careful marshalling of support derived from prestige and the implied differential access on which it is based (Earle 1978; Johnson and Earle 2000). Arguably, all societies have elements of interpersonal domination (Sanders 1984) such that the key to developing stratification is how such domination can be sustained. The nature of the economy would appear to be the basis of this control, but a debate exists as to its exact nature.

Control over staple production, as the first option, would be based on ownership of and restricted access to productive resources, most importantly land. Such control is manifest as a system of staple finance ([Chapter 8](#)). Food is mobilized from commoner producers as a rent for land made available to them. The Hawaiian "redistributional" economy illustrates well how this was accomplished (Earle 1978). Land was owned by the paramount chief by right of conquest. The land was then allocated to the high chiefs as their income estates. Commoners received use-rights to small subsistence plots in return for their work on lands producing for the chiefs' incomes. The food thus collected fed the chiefs' households, specialists attached to the chiefs, and all those working for the chiefs. Such mobilization was a simple and direct means to support a nonproducing sector of the society.

But how is the ownership developed on which this control rests ([Chapter 13](#))? The key would appear to be the productive dominance of limited lands that could be held and defended by an emerging elite (Flannery 1969; Price 1984). This domination would appear to be an outcome of particular

environmental conditions and the way they are developed and used. The best examples of how this can happen are those chiefdoms that depend on irrigation. In southeast Spain, the dry environment and its development with irrigation during the Copper and Bronze Ages permitted the growth of social stratification based on the control over the highly productive irrigable land (Chapman 1982; Gilman 1981, 1987; Gilman and Thornes 1984). In Polynesia a general trend exists between intensification and the development of social complexity (Kirch 1984). The prehistory of the Hawaiian islands illustrates clearly how intensification resulted in increasing economic control and social stratification (Earle 1978; Hommon 1976; Johnson and Earle 2000; Kirch 1984). Following initial colonization, population grew and spread through the islands, initially emphasizing marine resources but gradually shifting toward cultivation of the uplands. The farming of the uplands resulted in the degradation of this fragile resource and the alluviation of the valley floors (cf. Spriggs 1986). Influenced by these human-induced environmental changes, chiefs promoted a rapid shift to irrigated agriculture on the new alluvial soils as a means to maximize their competitive position (Earle 1978). The irrigated soils were but a small fraction of the agricultural soils on the island, and their development made ownership feasible.

Economic control through resource ownership may also help explain other examples of chiefly development not based on irrigation. Coe (1974) argues that the Olmec chiefdoms depended on ownership of the highly productive natural levee soils, the fertility of which was maintained by annual river flooding. The circum-Caribbean (Linares 1977) and Amazonian (Roosevelt 1980) chiefdoms were based on the intensive farming of alluvial bottoms, as were the Mississippian chiefdoms (Muller 1978). Carneiro's (1970) argument that chiefdoms depend on circumscription is an early statement of this principle. The aggregation of population accompanying intensification, and competition for the most productive land, simplify the control of labor on which mobilization can be based.

The payment of staples to the chiefs as part of mobilization is frequently mentioned in historical and ethnographic accounts, which permits some estimation of the rent charged in chiefdoms (Earle 1978; Steponaitis 1981). Archaeologically, evidence of mobilization is most frequently the distribution of central stores (Earle and D'Altroy 1982); generally it can be argued that aboveground (visible) storage was associated with the political economy in contrast to the hidden household stores of the subsistence economy (Johnson and Earle 2000). Steponaitis (1978, 1981) presents creative ways to investigate the mobilization of staple goods by examining the distribution of settlements and their relationships to productive resources.

An alternative means to control staple production may involve elites in the

manufacture of productive technology. Trobriand chiefs supported the importation of stone and its manufacture into working axes needed for land clearance (Johnson and Earle 2000). During the Iron Age, the intensification of agriculture in Europe involved the use of a new iron technology, the manufacture and distribution of which may have offered opportunities for elite control (Zwelebil 1985). Although we do not know their use, the production of obsidian tools was concentrated in elite households at Kaminaljuyu (Michels 1979). Specialized ceramic production could also be controlled by ownership of limited clay resources (Rice 1981). Evidence from elsewhere, however, would tend to suggest that specialization of productive tools was not a standard correlate of chiefdoms or even early states (Chapter 6; Muller 1987).

Control over the distribution of prestige goods is the second option as a means for centralizing power in chiefdoms. Such objects of wealth and prestige are found in acephalous societies as well as chiefdoms and states (Chapters 2 and 8). They act in social exchanges (such as bridewealth and death payments), as stores of value convertible into food, and as symbols of prestige and authority. Friedman and Rowlands (1977) develop a clear model of the role that wealth distribution plays in the political centralization of chiefdom-level societies. Through the distribution of wealth, labor becomes controlled by creating relationships of marriage, friendship, and alliance. This model has been applied to the European chiefdoms of the Iron Age (Frankenstein and Rowlands 1978) and the Bronze Age (Kristiansen 1982, 1984, 1987); Rowlands (1980) sets it up as an alternative to Gilman's (1981) model emphasizing direct control over production. Vivid examples of the use of wealth in chiefdoms include the gold adornment of Panamanian chiefs (Helms 1981b) and the competitive display and gifting of European objects in Iceland (Durrenberger 1992).

The reasons for developing systems of wealth exchanges in the first place may be several. The role of wealth as a store of value and the significance of regional exchange webs as a buffer against unstable food production have been mentioned. Alternatively such broad-scale exchanges involving wealth may be seen as part of broad networks of interaction among elites involved in status rivalry, alliance formation, and exchanges of esoteric knowledge (Chapter 7; Flannery 1968; Helms 1979; Renfrew and Cherry 1986). Where chiefdoms develop on the margins of more complex societies, the role of wealth in core-periphery relationships of domination and extraction has been discussed (Frankenstein and Rowlands 1978; Rowlands 1980; Upham 1982).

The simple existence of valuable exchanges does not in itself result in social complexity (Chapter 2). The key is how control over wealth distribution is exercised. Since exchanges are largely external to the community and thus beyond normal social networks, participation is effectively limited to lineage

heads or chiefs (Flannery 1968; Friedman and Rowlands 1977). The creation of spheres of exchange can be seen in this light as an attempt to exclude others from direct participation (Friedman and Rowlands 1977). The technology of the trade can also limit the possible participation; chiefs existed on the Trobriand Islands because of their marginal position in the *kula* exchange, which made large trading canoes a necessity (Burton 1975). Because construction of such canoes required large expenditures of labor, they were owned only by the chiefs. "Gateway communities" situated astride constricted exchange paths provide other opportunities for elite control of long-distance trade (Hirth 1978).

A further and perhaps surer means of control of wealth involves the support and management of its manufacture. Specialist craftsmen, attached directly to elite patrons, can be involved in the manufacture of wealth used in social exchanges and political payments ([Chapter 6](#); Brumfiel and Earle 1987). The presence of craft specialists for elites has been noted historically and archaeologically (Brumfiel and Earle 1987; Champion 1982; Earle 1978; Kristiansen 1987; Muller 1984, 1987; Yerkes 1983, 1986). However, the role of craft specialization in economic control probably provided only limited opportunities in chiefdoms. In the Iberian and Mississippian chiefdoms, for example, specialization was only weakly developed and was not under close elite control except as it involved production of special and rare objects (Gilman 1987; Muller 1984, 1987; Prentice 1983, 1985; Yerkes 1983, 1986).

Since the basis of control in wealth distribution lay largely outside the chiefdom economy, it must be understood in the broader regional context of peer-polity interaction (Renfrew and Cherry 1986) and core-periphery relations (Friedman and Rowlands 1977). This means that the chiefdoms constructed on wealth-flows were inherently unstable, and the relatively dramatic cycles of growth and decline of European chiefdoms may reflect this pattern. The chiefdoms of southeast Spain, which were based on control of staple production, contrast with the chiefdoms of Portugal, which were based on the distribution of wealth (Gilman 1987). Based on these alternative means of control it may be possible to conceive two developmental lines for chiefdoms with quite different dynamics, although actual cases combine both mechanisms of finance to some degree ([Chapter 8](#)).

A third mechanism of control in chiefdoms is the force of a strong warrior elite. The role of warfare in the evolution of chiefdoms seems undeniable (Carneiro 1978, 1981; Gumerman 1986; Webster 1975). Feinman and Neitzel (1984) found that leadership in war was a common function of chiefs. Historically, chiefs derive power from their leadership—conquered lands, plunder, and captives were theirs to use and distribute (Earle 1997; Milner 1986). In fact, conquest warfare can be viewed as one option in a chief's strategy to extend his income base (Earle 1978). The tie between warfare and

chiefdoms is often apparent archaeologically in defensive settlements (Cunliffe 1978; Earle 1997; Larson 1972; Moore and Keene 1983), in weapons of war (Chapter 12; Bradley 1984; Kristiansen 1987; Linares 1977), and in an iconography of war (Chapter 14; Drucker 1983; Linares 1977). Control over trade and manufacture of weapons can offer a basis of power (Goody 1971), and the power of the warrior elite is likely to extend into general leadership (Earle 1997).

Synthesis of the Economic Bases

The two materialist perspectives on the evolution of chiefdoms emphasize different driving forces—the managerial theories stress the system-serving functions of the chiefs; the control theories stress the exploitative capabilities of chiefs. A recent blending of the two perspectives shows how problems of survival create needs for leadership and, at the same time, opportunities for control (Johnson and Earle 2000). To understand the evolution of chiefdoms is thus to understand a balancing of interests between a dependent population and an emerging aristocracy. As systems of stratification evolved, the aristocracy manipulated the economic and political relationships so as to increase dependency and balance the favor of the interests toward the elites. However, it is essential to recognize that up to the industrial revolution the primary limit to production appears to have been labor, and control over this labor required the ruling elites to retain consensus through respectability. As I describe below, this was accomplished in part by an elaborate ideology to justify rule; however, it was also accomplished by the paternalism of the chiefs, which bound a population to them.

Ideological Bases of Chiefdoms

Chiefdoms are early stages of civilizations, and they are states of mind that create justifications for their existence (Chapter 14; Freidel 1981). Symbolism, cognition, and ideology have become of increasing interest within political anthropology and related studies in archaeology (Cohen 1969; Hodder 1982a; Miller and Tilley 1984; Shennan 1987). This trend is sensible and a necessary extension of the evolutionary theories elaborated since the 1950s. The original adaptationist theories of cultural evolution had little need for ideological concerns because it was generally assumed that cultures were integrated wholes in which evolving leadership served broader systemic needs. The

generation of processualists coming of age in the 1970s, however, recognized the internal conflicts and exploitative aspects of society (Brumfiel 1980; Earle 1978; Moore and Keene 1983). The new view of chiefdoms emphasizes internal conflicts between communities, elite factions, and emergent classes. Stability of such systems derives from a balance of interests (Johnson and Earle 2000), a monopoly of power (Gilman 1987), and a new ideology.

Abner Cohen's (1969) work on the symbols of power relations provides a starting point for this analysis. As he saw it, economic and political power were intimately bound, and symbols functioned to articulate groups with conflicting interests. Symbols, deeply rooted in the culture's conception of reality, served to naturalize the political relationships.

A pervasive image is of the chiefdom's "theocratic" nature, an ideological conception of the societies themselves. But "theocracy" refers to religious sanctions of leadership and not leadership by priests (Webster 1976). In complex chiefdoms like Hawaii (Earle 1978) and the Olmec ([Chapter 7](#)), the chiefs were gods whose rule was part of a natural order. Helms (1981a) describes chiefs as "sacred intermediaries between the ordered ('civilized, moral') human society under their charge and the equally ordered cosmos." Many of the ceremonies of chiefdoms, such as the ritual astronomy of the British henges (Ruggles and Whittle 1981), extend the ritual actions of the leaders to the orders of the universe. The careful order of the ritual landscape that characterizes chiefdoms held a clear message—chiefs rule not because of their power but because of their place in a sacredly chartered world order ([Chapter 7](#)).

In my review of the chiefdom literature, the ideological elements (as seen in the iconography and the architectural planning of sacred spaces) were clear. The specific content of chiefly ideology was variable both from place to place and from time to time. For example, Shennan (1982b) emphasizes how the change in chiefly order from the Megalithic to the Bell Beaker cultures represented a significant ideological change tied to a change in the social order. Although any attempt to synthesize ideology in chiefdoms is premature, I would like to suggest three themes tied perhaps to different bases of control.

First are the ceremonies of place associated with the creation of a sacred landscape with monumental constructions such as the henges and cursus monuments of Neolithic Britain (Bradley 1984; Renfrew 1973; [Chapter 13](#)), the mound groups of the Mississippian (Peebles 1983), and the *heiau* temples of Hawaii (Peebles and Kus 1977). These are created sacred spaces in which chiefs acted as gods on earth connected to cosmic forces. In Hawaii, the paramount chief portrayed the god Lono during the Makahiki ceremonies; as such he was responsible for the fertility of the lands and people under his direction (Peebles and Kus 1977). The created sacred landscape was the property of its creators,

the chiefs. Monumental construction thus probably asserts ownership, a point made for the European megaliths (Bradley 1986; Chapman 1981; Renfrew 1976); in essence the monuments create a focus for a space that is bounded, a product of human action, and owned by the group's earthly gods, the chiefs (Tilley 1984). Perhaps not by chance, the corvée labor organized to construct the monuments is exactly what would be the due of the chiefs as owners of the group's resources.

Second are the symbols of individual position within a society as seen most vividly in the burials. For the assemblages of both the Bell Beaker and Bronze Age burials in Britain and Scandinavia, objects were identified with the outside in terms either of style or of foreign material (Kristiansen 1982, 1984, 1987; Shennan 1982b). These chiefdoms and those among the Olmec, Chavin, and Mississippian were associated with the broad interaction spheres. In these situations, it may be suggested that power derives from the outside and involves the exchange of prestige goods. Ultimately, however, not the objects themselves were important but the esoteric knowledge and power they embodied (Helms 1979). The dichotomy observed in Bronze Age objects (male-female; individualized-standardized; foreign-local)(Sorensen 1987) may reflect the competitive public arena of males vying for external power in contrast to the private arena of females. Chiefs often emphasize their foreign origins (Sahlins 1985), an assertion that serves to legitimize rule by a group set off and connected to a universal (rather than a local) order. The broad searching out of marriages, although also serving an alliance function (Flannery 1968), served to establish ties to chiefly lines of divine power. In Hawaii, the ruling families of the different island chiefdoms were interconnected by a "cosmopolitan outlook" (Hommon 1986).

Third are the symbols of warrior might represented in the burial assemblages of many chiefdoms ([Chapter 14](#); Bradley 1984; Linares 1977). These symbols of might, such as the Bronze Age swords (Kristiansen 1987), tell of a military superiority that need not be used if it is acknowledged. The Panamanian chiefdoms associated with the Code style illustrate well the use of warrior symbolism (Linares 1977). Burials are accompanied by instruments of war and by elaborately decorated ceramics that emphasize animal depictions selected for their warlike characteristics of attack, ferocity, poisonousness, or protective hardness. Rather than simply mirroring a warrior society, such symbols intimidate and thus smooth succession to power as a continuity of the natural world order of domination by the forceful (Linares 1977).

It is important to emphasize that the three ideological motifs recognized for chiefdoms are in no sense alternatives. In the Wessex chiefdoms, for example, the new ideology associated with personal burials gained local legitimacy by placing the burials in direct association with the earlier henge monuments

(Bradley 1984). I only wish to suggest that the elaboration and emphasis of one theme over another may reflect the different sources of power.

This discussion leads naturally to a consideration of the primacy of variables in the explanation of chiefdoms. Most dealing with ideology would still consider it as epiphenomenal to the underlying economic forces, created to legitimize systems of domination ([Chapter 7](#); Drennan 1976). But there is an alternative strain, especially tied to the cognitive archaeology of Hodder (1982a), that would suggest that ideology can take on a guiding role (Miller and Tilley 1984; Shennan 1982b). Logically it is possible to argue the primacy of either, and it would seem preferable to see the economic and ideological bases of chiefdoms as intertwined and developing together.

Some Recent Work

Since the 1987 publication of this chapter, a wealth of case material has been made available on middle range societies in North America for the Mississippian chiefdoms (Anderson 1994; Barker and Pauketat 1992; Blitz 1993; Cobb 1989; Emerson 1997; Knight and Steponaitis 1998; Milner 1998; Muller 1997; Pauketat 1994), for the Calusa (Marquardt 1988; Widmer 1988), for the mid-Atlantic coast Powhatan (Rountree 1989), for the southern California Chumash (Arnold 1995), and for Chaco Canyon and Hohokam (Cameron and Toll 2001; Crown and Judge 1991; Lekson 1999; Sebastian 1992), in the Caribbean (Curet 1992; Keegan and Maclachlan 1989; Wilson 1990), in tropical forest South America (Drennan 1985; Redmond 1998; Spencer 1998; Spencer and Redmond 1992), in Europe for Celtic and Bronze Age societies (Arnold and Gibson 1995; Kristiansen 1998a), in the Pacific for Philippine and Polynesian chiefdoms (Junker 1999; Kirch 1994,2000; Kolb 1994), in west Asia (Stein and Rothman 1994), and in Africa (Bisson et al. 2000; McIntosh 1999).

Perhaps the most important conclusion to come out of our investigations is that middle range societies are highly variable (Earle 1991). But how are we to understand them with their different formations? Some researchers believe that any monolithic social type called chiefdoms has ceased to have usefulness, because the archaeological, historical, and ethnographic evidence show all previous definitions to be too constraining (Yoffee 1993). If we were to accept that argument, no typology of society would be possible and our framing of comparisons would be compromised (Spencer 1987). The evolution of societies involves complex power relationships, cultural definitions of meaning, and historical contingencies that create great variation in how societies are organized and function (Mann 1986; Wolf 1999). If we are to explain this

variation, we must do away with assumptions about natural types to be discovered. We can, however, still use the social types (e.g., family level, local group, chiefdom, state; see [Chapter 1](#)) as heuristic categories for purposes of framing our investigations.

As discussed in this chapter, my analysis is that alternative sources of power (economic, military, and ideological) exist and that access to them is always contested by would-be leaders. In *How Chiefs Come to Power* (Earle 1997), I argue that success of one leader over another depends largely on the ability to finance and control the sources of power by mobilizing and investing surplus generated by controlling an emergent political economy. Alternative sources of power are also discussed at length by the contributors to *Chiefdoms: Power, Economy, and Ideology* (Earle 1991). The emergence of political inequality on which chiefdoms rest is discussed by the contributors to *The Evolution of Political Systems* (Upham 1990) and *Foundations of Social Inequality* (Price and Feinman 1995). Important chapters in these books look at contrasting cases of emergent inequality with their different pathways to power based on intensification of wild and domestic resources (Hayden 1995; Netting 1990). The role of competitive feasting has been evaluated cross-culturally (Dietler and Hayden 2001).

Recently Richard Blanton et al. (1996) discussed alternative means to construct political institutions based on network and corporate strategies; I believe that this important distinction derives from contrasting political economies ([Chapters 1 and 12](#)). These contrasting strategies may be structured differently (Ehrenreich et al. 1995): the more hierarchical chiefdoms of Polynesia ([Chapters 4-7](#)) vs. the more "heterarchical" polities of Europe (Levy 1995; [Chapters 12-14](#)) and Africa (MacIntosh 1999). Political institutions also vary in terms of their long-term stability and formal structures as between chiefdoms and chieftaincies (Redmond 1998). The African cases discussed in *Beyond Chiefdoms: Pathways to Complexity in Africa* (McIntosh 1999) illustrate particularly well these alternatives. Writers appear to agree that the variation has the potential for being both continuous and multivariate. A simple heuristic dichotomy, however, may capture some key contrasts:

<i>corporate strategies</i>	<i>network strategies</i>
staple finance	wealth finance
hierarchical structure	heterarchical structure
chiefdoms	chieftaincies

The chiefdom is not a unitary stage of social evolution that characterizes one type of society developing independently across the world. Rather at different places and times, human agents have fashioned distinct societies with similar

scale of political integration. Our goal should be to understand the parallel and divergent processes of social evolution. Some are idiosyncratic, to be sure, understood by unique histories of places and times. Others have to do more with differences in environment, technology, economy, and political organization. I concentrate on how economic factors of subsistence, social feasting, power, and finance linked together in systems of support and domination to create alternative "pathways to complexity." I believe that my approach is necessary to understand social evolution, but it will not stand alone.

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Part I

Hawaiian Chieftoms

Seven major islands make up the Hawaiian chain, located in the north central Pacific Ocean, just within the tropics spanning 19° to 22° north latitude. The Hawaiian Islands are a string of volcanic peaks that were formed as the earth's crust moved westward across an underlying geological hot spot. The chain of peaks are isolated from all other major islands or landmasses of the world by more than 5000 km of open ocean.

Each island has a central peak that slopes sharply to the sea. The environment is a tropical paradise with warm weather, heavy rainfall, and dramatic scenery. Hillsides bear lush vegetation and tracery waterfalls. Factoring out effects of the island landmasses, expected annual rainfall is 1500-2000 mm, with rain falling through the year but concentrated in the winter months (Thomas 1965: 34). Vegetation patterns show marked contrasts between the wetter windward side of islands and the leeward dry sides. Temperatures are remarkably constant throughout the year at sea level, averaging from 23° to 27°C (74-80°F) with little diurnal variation.

The island chosen for my primary study was Kaua'i, the most westerly and oldest of the main Hawaiian group ([Fig. I.1](#)). It is only 40 km across and about 1,400 km² in land area. The single central mountain cone rises to 1,548 m. Known as the Garden Island, Kaua'i is heavily eroded; streams radiate from the central mountain cutting deep valleys to the coast. Soils are volcanic, with rich alluvium along the valley floors and at the mouths of the streams. The steep topography determines a contrasting rainfall pattern—leeward/dry, windward/wet ([Chapter 5](#)). Within a compact area, soil, water, and vegetation vary dramatically, and this variation strongly affected agricultural productivity across the island.

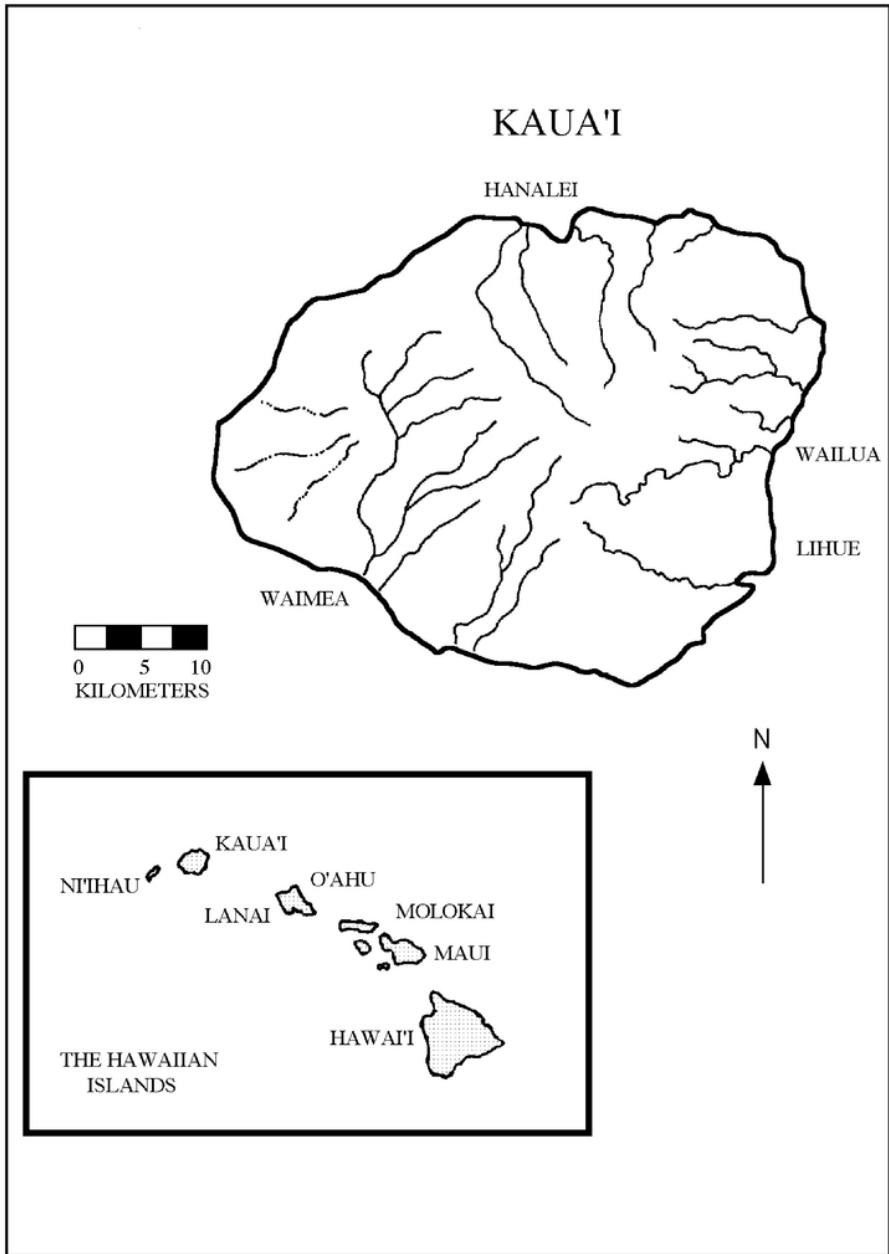


FIGURE 1.1 Island of Kaua'i. (*Earle 1978*)

At time of contact, the social organization of the Hawaiian Islands was the most complex of any Polynesian chiefdoms and probably of any chiefdoms known elsewhere in the world. A strong separation existed between the chiefs and their followers. The chiefs were organized into the ruling lineages of the different major islands—Kaua'i, O'ahu, Maui, and Hawai'i. Stretching back for 20 generations and more, genealogies were remembered by specialists attached

to the paramounts. The paramount chief, supposedly the highest-ranking personage of the ruling lineage, was the sovereign; in theory, a chief's genealogical distance from the paramount determined rights to an office such as chief of a local valley community. In reality the competition for such positions was intense and highly personal; most chiefs were very closely related to the paramount (within a first-cousin relationship) and had frequently fought by his side in wars of succession and conquest.

Chiefs ruled Hawaiian society. The community chief was the *ali'i 'ai ahupua'a*, the chief who ate from a community. Lower-ranked chiefs could be a member of the paramount's retinue, as his warrior or one of the many attendants to assist the chief and to carry his symbols of office, such as his *kahili* (fly-swatter) and spittoon. Lower-ranked chiefs also served as *konohiki* (managers) of a chief's *ahupua'a* (community), putting commoners to work on the chief's lands and on other special projects. The *konohiki* acted as the local leader, organizing economic and ritual activities in the community. If an irrigation system were in need of repair, he organized the work project and the accompanying feast. The *konohiki* also mobilized labor to obtain the goods given annually to the paramounts. When the paramount, representing the god Lono, arrived at the community's shrine, gifts were offered up to him.

Commoners made up most of the Hawaiian population. They lived in their communities, where they subsisted on the agricultural plots received from their chiefs, on fish from the sea, streams, and the chiefs' fish ponds, and on wild foods gathered along the coast and from inland forests. Deprived of access to the chiefs' memory specialists, commoners did not keep genealogies; in fact it was prohibited (*tabu*) to keep a genealogy that might demonstrate a commoner's distinction (Kamakau 1961: 242; Malo 1951 [1898]: 60; Sahlins 1971). The contrast in kinship knowledge emphasized the sharp division between the chiefs and the commoners. The identity and organization of the commoners derived from the community where they resided and from the chiefs to whom they owed work.

Primary historical sources richly document Hawaiian chiefly society during the periods just prior to, during, and following Western expansion into the north Pacific. In 1778, the British explorer and navigator Captain James Cook anchored off Waimea on the south coast of Kaua'i. He was greeted with the respect due a high chief:

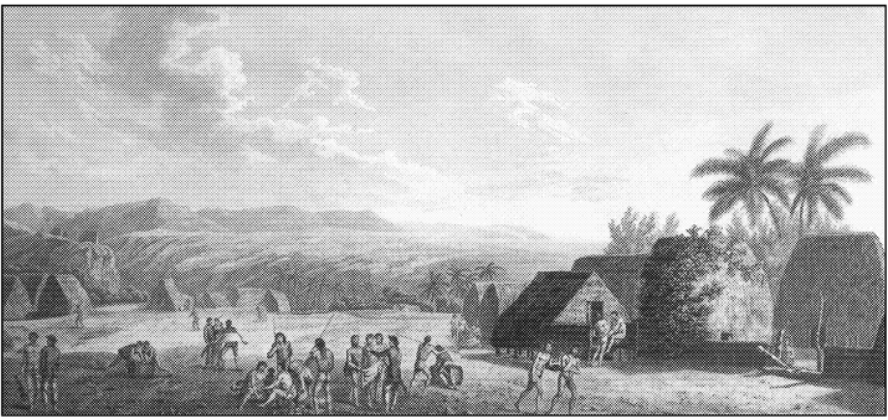


FIGURE 1.2 Waimea, Kaua'i, at time of contact, (*drawing by John Webber; King 1784*)

The very instant I leaped ashore, they [the islanders] all fell flat on their faces, and remained in that humble posture till I made signs to them to rise. They then brought a great many small pigs and gave us without regarding whether they got any thing in return. [Cook 1967: 269]

At Waimea Captain Cook witnessed the daily life of a complex Hawaiian chiefdom seen for the first time by Europeans (Fig. 1.2). Small walled houselots were scattered across the valley floor, and upvalley a major irrigation complex had been constructed for taro cultivation. Women pounded the *tapa* cloth, and men worked in the fields. The Hawaiians eagerly traded food, feathers, and sexual service for novel goods, especially iron. Explorers, traders, and missionaries followed, and these early visitors and residents recorded details of turbulent Hawaiian society as it was becoming incorporated into Western history and the world economy (see, for example, Campbell 1967 [1822]; Ellis 1963 [1827]; Vancouver 1798). But our vision is not one-sided. Hawaiian chiefs, taught to read and write in their native Hawaiian, recorded oral histories of the island polities, their personal remembrances and analyses, and marvelously detailed ethno-ethnographies (Beckwith 1932; I'i 1959; Kamakau 1961, 1964, 1976; Malo 1951 [1898]). Kamakau described that fateful moment on Kaua'i:

The valley of Waimea rang with the shouts of the excited people as they saw the boat with its masts and its sails shaped like a gigantic sting ray. One asked another, "What are those branching things?" and the other answered, "They are trees moving about on the sea." Still another thought, "A double canoe of the hairless one of Mana!" A certain kahuna named Ku-'ohu declared, "That can be nothing else than the *heiau* of Lono, the tower of Ke-o-lewa, and the place of sacrifice at the alter. [Kamakau 1961: 92]

Captain Cook may have been thought a human manifestation of the god Lono, returning to Waimea, a location important in his narrative (Sahlins 1985; Valeri 1985), but the military uses of the European ships and their iron were the magic that the Hawaiians soon sought for their own political aims.

The archaeological record documenting the development of Hawaiian

society is as yet not as bountiful. Initial work inventoried archaeological sites, many of which were known through historical documentation (Bennett 1931). Systematic work on the settlement patterns and economy began in the 1960s with extensive valley surveys on O'ahu, Molokai, and Hawai'i (R. Green 1980; Kirch and Kelly 1975). Following on this new direction in economic and social archaeology, my doctoral dissertation analyzed the subsistence and political economy of the north coast of Kaua'i at the time of European contact (Earle 1978). I participated in an ethnohistorical project organized by Marshall Sahlins (1992; Linnekin 1987) to analyze the Great Mahele, which occurred in 1854 and created fee-simple (private property) land ownership through the islands. Valleys (former *ahupua'a*) were deeded to the chiefs, and small subsistence plots to the commoners. From the beginning, Sahlins (1971; Kirch and Sahlins 1992) sought to unite documentary and archaeological research, and I reviewed the historical records for the Halelea District on the north coast of Kaua'i and then conducted an extensive mapping project to document the extent and technological character of its historic irrigation systems.

Since my doctoral work, archaeological research in the Islands has been augmented by large-scale Cultural Resource Management projects that inventoried archaeological sites and excavated those threatened by development. CRM work has combined earlier work on settlement pattern, economy, and social organization with extensive attempts to date sites and describe the long-term evolutionary trajectory of society (Cordy 1981; Dye and Komori 1992; Hommon 1986; Kirch 1984, 1985, 2000; Kolb 1994). We can now describe with some confidence the long-term history of the Islands' settlement and evolution.

The Hawaiian Islands were first settled in the centuries after Christ, perhaps around A.D. 400. The island environment, as it existed at first colonization, was much different from what Cook saw 1,400 years later. Originally the islands were forested; stands of *ohia* and *koa* stretched down to the coast. The species diversity in these forests was, however, fairly impoverished (Kirch 1982a). Since the range of species that colonize an island is limited to those species that can reach it, distance from continents limits colonization. Moving out eastward into the deep Pacific and away from Asia, the numbers of plant and animal species decline. Because the Hawaiian Islands and other Polynesian islands in the central and eastern Pacific are among the most isolated in the world, numbers of endemic species were small, and included few useful to humans. Except for the bat, no land mammals reached the islands; among birds, several species of duck, geese, ibis, and rail were hunted. Pelagic and inshore fishes and sea mammals were the most abundant wild food resources.

With both intended and unintended consequences, the colonizing Polynesians transformed the original island environments. The colonists must

have understood the relatively impoverished nature of the environment that they were settling, and so they carried with them the plants and animals needed to establish a viable subsistence economy. Crowded sea-going canoes of the colonizing Polynesians must have been heavily loaded with immigrants, their pigs, dogs, and chickens, cuttings and tubers of domesticates such as taro, sweet potato, sugarcane, and bananas, and a full assortment of seeds, nuts, and cuttings for coconut, candlenut, medicinal plants, and fiber plants that would be encouraged to go feral on the newly settled islands. Initially the settlers depended heavily on marine resources (Kirch 1984), and subsequently the diet gave way to domesticated pig and dog (Kirch and Kelly 1975: 68-69). Larger endemic birds, such as the geese, rail, and ibis, were easy game, and many species were driven to extinction by overhunting and anthropogenic changes to the environment (Olson and James 1984). The Polynesian islands came to have "transported environments" with many economic species introduced by Polynesians to replace a fragile and limited natural resource base (Kirch 1982a).

The cutting of the island forests for farming exacerbated deforestation and soil erosion, thus transforming the environment irreparably (Kirch 1982b; Christensen and Kirch 1986), and the increased erosion added sediments to the valley floors (Spriggs 1986). New alluvial soils on the valley floors and river mouths were then transformed into irrigated taro fields (Allen 1991). What had been created was a totally artificial and highly productive environment that contained the artificial pond fields for taro fed by irrigation canals, embankments between the fields planted with coconuts, bananas, and sugarcane, and larger ponds used to raise fish ([Chapter 5](#)). As seen by Captain Cook, the intensively farmed valleys and grass-covered hills were cultural artifacts.

The changing island environment corresponded to a long-term increase in people and a sizable final population. An original small founding population, perhaps no more than a few hundred augmented by several voyages, grew to several thousand by A.D. 800. Initially settling on the most productive lands, people would have spread to the drier leeward shores and interiors somewhat later (Cordy 1974). An increasing dependence on agriculture supported the spread of population through the islands, and, after A.D. 1200, rapidly expanding populations required sustained agricultural intensification. But how high did the population of the Hawaiian Islands reach and at what point did it get there? Certainly the peak population for the Hawaiian Islands was the highest for any archipelago in Polynesia, but the final figure is disputed (Stannard 1989; Nordyke 1989). The first rough estimations by Cook and his crew members range from 240,000 to 400,000 for all the islands. A careful, and long accepted, evaluation of the historical evidence by Schmitt (1971) came to a lower estimate range of 200,000 to 250,000 people, which Nordyke (1989: Table

1) increases somewhat to 310,000. Stannard (1989) tops all modern estimates with 800,000 people, assuming potential growth rates and agricultural resources for the Islands. Systematic archaeological work may help resolve the final figure.

One way to quantify population growth is to evaluate the relative frequency of radiocarbon dates for an archaeological sequence, assuming of course that archaeological work has not been unduly directed toward the sites of particular time periods or localities (Rick 1987). Using this technique to analyze 495 age determinations from the Hawaiian Islands (18 from Kaua'i), Dye and Komori (1992) established a population growth curve (Fig. 1.3). Following a long period of gradual buildup (A.D. 400-1200), population for the Islands grew rapidly, peaking at perhaps 160,000 around A.D. 1500. Then, until Western incorporation at the end of the eighteenth century, population may have stabilized or declined. These estimations, especially the stall in growth, are not broadly accepted because of potential problems in the representativeness of the radiocarbon samples (P. Kirch, personal communication); samples may be underrepresented for late in the growth cycle, which probably took place in the prime areas long since covered by developments.

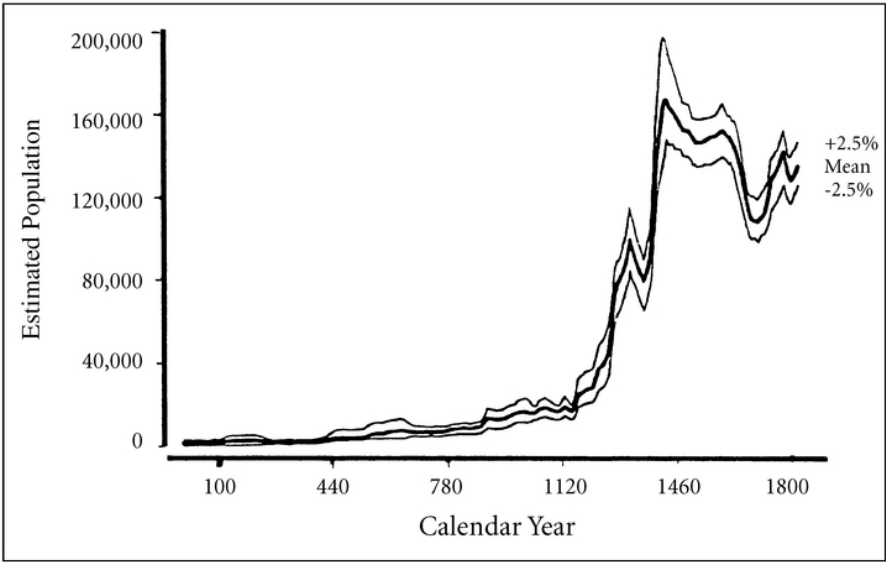


FIGURE 1.3 Estimated population growth curve for the Hawaiian Islands. (after Dye and Komori 1992)

At a minimum we can accept the substantial growth in population prior to A.D. 1500, and linked to clearing the forests for agricultural fields. But the major reconstruction of the environment, involving the construction of the artificial agricultural environments discussed in [Chapter 5](#), took place largely *after* A.D.

1500 when population growth appears to have slowed substantially (cf. Kirch 1990). Although it is possible that the decline proposed by Dye and Komori was more of a concentration of population, continued growth is conjectural. We can conclude that the initial expanding population evidently caused an intensification of agriculture, but that the post-1500 technological transformation (with the rapid expansion of irrigation) may *not* have been driven by population growth. Rather, the population concentration in regions with intensive irrigation draws attention to quite different dynamics of the political economy ([Chapter 3](#)).

During initial colonization, the settlers would have carried with them early archaic, or Proto-Polynesian principles of rank and leadership. Although the operational strength of these principles would have been a weak source of power alone, they would have provided important legitimation for authority constructed subsequently from other sources of power. Polynesian social structure is often described as a conical clan, a nonexogamous, ambilateral, and ranked sociopolitical organization. Ranking is based on the measured distance from a senior line, whereby the highest ranked individual is the eldest son in the direct line of eldest sons. Theoretically each individual has a unique rank "precisely in proportion to his distance from the senior line of descent" (Sahlins 1958: 141). Common throughout Polynesian languages is the term for chief (**arike*, Proto-Polynesian; *ali'i*, Hawaiian). These chiefs probably maintained their distinction as leaders in different ways, but minimally as owners and organizers of the sea-going, colonizing canoes.

Through the thousand-year sequence considered here, the complexity of Hawaiian political organization increased dramatically. Oral histories tell of an expansion of political power and the subsequent scale of political integration: Through conquest and intermarriage, successful paramounts extended the scale and reach of chiefly polities. Relying on oral histories for the island of Maui, Kolb (1994) describes the progressive fashioning of more inclusive chiefdoms. By A.D. 800, settlement had spread across much of Maui. As reconstructed for Proto-Polynesian culture (Kirch and Green 1987: 431), early Hawaiian populations were probably organized as simple chiefdoms, in which the chiefs led local landholding descent groups. During the Formative Period (A.D. 1200-1400), chiefdoms expanded in scale, and during the Consolidation Period (A.D. 1400-1500), two regional chiefdoms formed on the eastern and western ends of Maui, each attempting to expand territory against the other. On the western coast of Hawai'i during this phase, a buffer zone without settlement formed, presumably between competing chiefdoms (Cordy 1981: 180-181). Eventually during the Unification Period (A.D. 1500-1650), the islandwide Maui chiefdom was formed through successful conquest, and the paramount 'Umi conquered the whole island of Hawai'i. The long-term trend

of expansion through conquest continued during the Annexation Period (A.D. 1650-1820) as the island chiefdoms of Maui and Hawai'i fought repeatedly with each other in attempts to establish interisland polities. With Western ships, guns, and special personnel, the young paramount of Hawai'i, Kamehameha, conquered Maui in 1790 as his first successful campaign to create a Hawaiian state.

The emergence of stratification has been documented archaeologically by a growing differentiation in labor invested in burial monuments (Tainter 1973) and in elite house platforms (Cordy 1981). Prior to A.D. 1400, house platforms were not distinctive, but following this time a few households with elaborate terraces and enclosing walls were constructed. These striking houses demonstrate an emergent chiefly segment that used group labor to set themselves apart. During the Consolidation Period on Maui (A.D. 1400-1500), the construction of religious monuments (*heiau*) increased dramatically (Kolb 1994). This increased control of labor, as evidenced by the size of the monuments constructed, reflects the institutionalization and strengthening of leadership as the chiefdoms of eastern and western Maui formed.

Hawaiian prehistory records the evolution of chiefdoms from competing simple chiefdoms to the five large and complex Island chiefdoms that at contact so impressed Captain Cook and other early explorers. Hawaiian society was the apogee of Polynesian social complexity, verging on state formation. What economy made this possible? The economy was unlike what most people might expect to characterize complex societies. Specialization and trade in most commodities were almost nonexistent. Redistribution was limited to surplus mobilization. Irrigated agriculture was highly productive, but the technology was comparatively simple. Objects of wealth were dramatic, associating the chiefs with the gods, but were largely inalienable and so exchanged only within carefully structured political networks. The high productivity of the agricultural base supported a dense population and permitted the mobilization of surplus production from fields owned by the chiefs.

A Reappraisal of Redistribution

Complex Hawaiian Chiefdoms

Redistribution, a term familiar to most anthropologists, is still not well understood. Although it is commonly used in economic and evolutionary studies, its meaning remains imprecise. This chapter seeks to untangle the definition of redistribution and then to test selected propositions concerning its evolutionary significance. Two related issues are addressed: (1) redistribution as a typological category of primitive economies, and (2) redistribution as a causal factor in the evolution of social stratification.

Since Polanyi (1944, 1957) defined "redistribution," researchers have sought to characterize economic institutions or economies as "redistributional" and have sought an understanding of the functional and evolutionary importance of redistributional organization. The writings of Elman Service (1962, 1975) stand out as a principal interpretation of redistribution's import. In his evolutionary scheme, redistribution is postulated as a central factor in the development of chiefdoms. Service views chiefdoms as redistributional societies based on a permanent centralized agency for coordination. To paraphrase Service's evolutionary argument, this centralized agency (the redistributive hierarchy of chiefdoms) developed in response to ecologically determined specialization and its requirements for economic coordination. However, Service's proposition concerning redistribution is flawed by definitional and evidential problems. After examining the forms of redistribution and singling out mobilization as associated with chiefly redistributive hierarchies, this paper will test Service's hypothesis with data on the economic organization of the precontact Hawaiian chiefdoms.

Redistribution: An Analysis of Institutional Forms

According to Polanyi's definition, the primary defining characteristic of redistribution is its centrality of organization: "redistribution designates appropriational movements towards a center and out of it again" (1957: 250).

To Polanyi (1957: 254), redistribution describes a wide range of activities including the massive collecting and storage of goods in the archaic states of Egypt and Babylonia, the householding activities of a medieval manor and African *kraal*, and distribution of meat in a band society. Following Polanyi's lead, many authors have applied the term "redistribution" to everything from forceful seizures (Pospisil 1963), to obligating marriage payments (Forde and Douglas 1967 [1956]), to potlatching (Schneider 1974), to first-fruit ceremonies in chiefdoms (Sahlins 1958, 1972), to tribute/taxation in archaic and feudal states (Dalton 1961), to charity and progressive taxation in modern industrial societies (Smelser 1959). While all these activities are similar inasmuch as they involve the concentration and dispersal of goods, it can be asked legitimately whether any economic system does not involve this process in some way.

It is my belief that several separate institutional forms have been lumped together under the single cover term redistribution. Therefore, the goal of this paper is to isolate the separate organizational forms that have been called "redistribution" and to use this refined typology to examine the evolutionary significance of redistribution. The following four-part typology of redistributive institutions has been synthesized from the existing literature.

1. *Leveling mechanisms* (Nash 1966: 35, 78-79; Schneider 1974: 105, 110): any cultural institution the effect of which is to counteract the concentration of wealth by individuals or groups. Examples: ceremonial obligations, potlatching, progressive taxation.
2. *Householding* (Polanyi 1944, 1957): the pooling and general consumption of goods produced under the division of labor characteristic of a domestic unit. Example: the Domestic Mode of Production (Sahlins 1972).
3. *Share-out*: the allocation of goods produced by cooperative labor to participants and the owners of the factors of production. Example: distribution of meat resulting from cooperative hunts.
4. *Mobilization* (Smelser 1959): the recruitment of goods and services for the benefit of a group not coterminous with the contributing members. Examples: tribute, taxation, and corvée labor.

Among the four parts of this typology, two levels of distinguishing features are relevant. First, leveling mechanisms are distinguished from the three other types on structural criteria. A leveling mechanism has no single institutionalized structure; rather, it is distinguished by its effect—the counteraction of wealth concentration. In contrast, the other three are all specific social institutions characterized by centralized leadership that manages the production and distribution of goods within a group. Second, the three

institutional forms of householding, share-out, and mobilization are distinguished by the size of groups that they organize. Householding organizes domestic production; share-out, interhousehold production usually within a single community; and mobilization, intercommunity production as associated with "public economies." These typological distinctions imply that, since the organizational structures are diverse both in function and in size, explanations for the evolution of redistribution are equally varied.

Attempts to understand the evolution of redistribution have been limited by a failure to examine separately these diverse institutional forms. Therefore, many authors (Polanyi 1957; Sahlins 1972) have concluded that redistribution (in the forms of leveling mechanisms, householding, and share-out) is widely represented at all levels of social complexity. This should not be surprising as these forms of redistribution execute general organizational functions found nearly universally in societies, and thus redistribution as a cover term has not been diacritical in the definition of evolutionary forms of social organization.

On the other hand, mobilization is more limited in its function and in its distribution. Redistribution in the form of mobilization is basic to ranked and stratified societies (Service 1962; Sahlins 1972):

the channeling upwards [mobilization] of goods or services to socially determined allocative centers (usually king, chief, or priest), who then redistribute to either their subordinates at large by providing community services, or in specific allotments to individuals in accordance with their political, religious, or military status. [Dalton 1961]

In chiefdoms and primitive states, an elite stratum is physically removed from most production and depends on goods and services mobilized from the commoner population to finance their public and private activities. The elites are both a hereditary aristocracy with an imposing lifestyle and a sociopolitical leadership group responsible for the general well-being of their dependents (Goldman 1970). Elites are organized as a regionally centralized hierarchy, important for both mobilization and decisionmaking. Goods are collected and orders are promulgated. As recognized by Service (1962), centralized hierarchical organization marks the evolution of chiefdoms, and this organization depends on mobilization for its existence.

Service's Hypothesis

"Chiefdoms are redistributive societies with a permanent agency for coordination" (Service 1962: 144). In line with Service's logic, this *redistributive hierarchy*, as I refer to it, evolved in response to economic specialization requiring central coordination. This specialization is a result of one or both of

the following economic conditions: (1) "the pooling of individual skills in large-scale cooperative production" and (2) "the regional, or ecological, specialization of different local residential units" (Service 1962: 145). In the first instance, the centralized organization of chiefdoms is seen as a consequence of the managerial requirements of cooperative labor activities (Wittfogel 1957). Service believed, however, that the primary factor in the evolution of chiefdoms is the second condition, environmental diversity. His argument goes as follows: For a sedentary society, environmental diversity results in economic specialization; the centralized redistributive hierarchy of a chiefdom then evolves as an efficient means to distribute goods among the locally specialized communities.

Most chiefdoms seem to have risen where important regional exchange and a consequent increase in local specialization came about because ecological differentiation was combined with considerable sedentariness. [Service 1962: 146]

In brief, this hypothesis seeks to explain the evolution of chiefdoms as the social consequence of developing Durkheimian "organic solidarity."

Despite the logical elegance of this ecological theory, it does *not* agree well with the ethnographic and ethnohistorical evidence of chiefly organization. Central to Service's argument is that the redistributive hierarchy acts to integrate locally specialized, community-based economies. As I will show for the specific case of Hawaiian chiefdoms, the local communities were organized as generalized subsistence units. The redistributive hierarchy functioned primarily in the special context of financing the elite stratum and its political activities.

The Evidence from Hawaii: A Complex Chiefdom

Perhaps nowhere in the world are chiefdoms so well represented and documented as they are in Polynesia (Sahlins 1958; Goldman 1970), and the Hawaiian Islands offer an ideal opportunity to examine the relationship between environmental diversity and chiefly organization as postulated by Service. The islands are characterized by high environmental diversity. Within a single chiefdom's territory, the environment includes pelagic, coastal, riverine, upland, and mountain ecozones. The vegetation ranges from xerophytic communities to tropical forests. As would be predicted by Service's hypothesis, the social organization of the Hawaiian Islands was based aboriginally on a regional redistributive hierarchy involved in mobilization of goods and services from the commoner population. Hawaiian chiefs were a

hereditary aristocracy removed from production activities but leaders in all economic, political, and religious affairs. The basic conditions of Service's argument are thus met—a regionally centralized chiefdom is found directly associated with high environmental diversity.

Although this association is evident, the exact nature of the relationship warrants closer scrutiny. Service suggests that the redistributive hierarchies of chiefdoms should be based on the centralized coordination of locally specialized communities. Such local specialization would correspond to environmentally diverse zones, and the resulting community economic interdependence would select for the evolution of a regional sociopolitical organization. However, in the following sections, the economy and social organization of the local Hawaiian community will be shown, in direct contradiction to Service's hypothesis, to have been economically generalized.

The Economy of the Hawaiian Community

Aboriginally, the local Hawaiian community was defined by its attachment to a property unit called the *ahupua'a*. In accordance with Service's hypothesis, it is this unit that should show economic specialization. The *ahupua'a* population was socially circumscribed by high endogamy and low emigration (Sahlins 1971). Economically, it formed the basis for many suprafamily cooperative labor activities like net-fishing and the construction of irrigation systems. *Ahupua'a* may be classified into two general types corresponding to contrasting geographic conditions. In geologically old areas, the local land division, a valley *ahupua'a*, encompassed a full catchment area for a major stream; the agriculture of these valley *ahupua'a* was based on pondfield irrigation. This pattern, in which each major valley was a separate *ahupua'a*, was characteristic of Kaua'i, O'ahu, Moloka'i, Maui, and parts of Hawai'i. In contrast, in geologically young areas where major streams have not developed, the local land divisions, an upland *ahupua'a*, were arbitrary territorial strips that ran from the mountains to the sea. Because of the lack of a permanent water source, upland *ahupua'a* relied on rainfall agriculture. This upland pattern was typical of the islands of Hawai'i and of eastern Maui and the driest sections of the other islands. The relationship between resource ownership and the subsistence economy of the *ahupua'a* community is examined for the Halelea district, Kaua'i, typifying the valley *ahupua'a*, and the leeward districts of Hawai'i, typifying the upland *ahupua'a*.

The Valley *Ahupua'a* of Halelea District, Kaua'i. The economic organization of the valley *ahupua'a* is well illustrated by the land divisions of the Halelea

District on the windward, northern coast of Kaua'i. The following description is a summary of an ethnohistoric and archaeological research project focused on the economic and social organization of a traditional district (Earle 1978). Nine *ahupua'a* have been identified for Halelea in 1850. Seven of these encompassed an entire drainage basin for each of the major streams, which have their headwaters in the high central mountains and flow to the Pacific. *Ahupua'a* boundaries ran along the dramatic knife-edge ridges dividing the valleys from each other; thus, each valley was a separate *ahupua'a*.

The three major subsistence resource zones in Halelea (Fig. 4.1) were the alluvial bottomlands, the shallow inshore waters, and the uplands. The alluvial bottomlands were intensively farmed by both irrigation and dryland agriculture. The primary crops included taro, sweet potato, and banana. The resources of the sea were of almost equal significance as fish provided the primary protein of the diet. Fishing in the shallow waters of the coral reefs and bays was most productive, and this zone was carefully divided among *ahupua'a* as "owned" territory. The less heavily utilized zone of the uplands and valley interiors was important for extensive hunting and collecting of feral and wild species such as pig, chicken, banana, and various fiber-and wood-producing plants. These resources were an important source of variety in the diet, of famine foods, and of numerous raw materials.

From Service's hypothesis, one might predict that these subsistence resource zones would have been subdivided such that communities would have tended to specialize in subsistence activities. However, the *ahupua'a* boundaries were laid out so as to include all necessary resources within a single *ahupua'a* terri

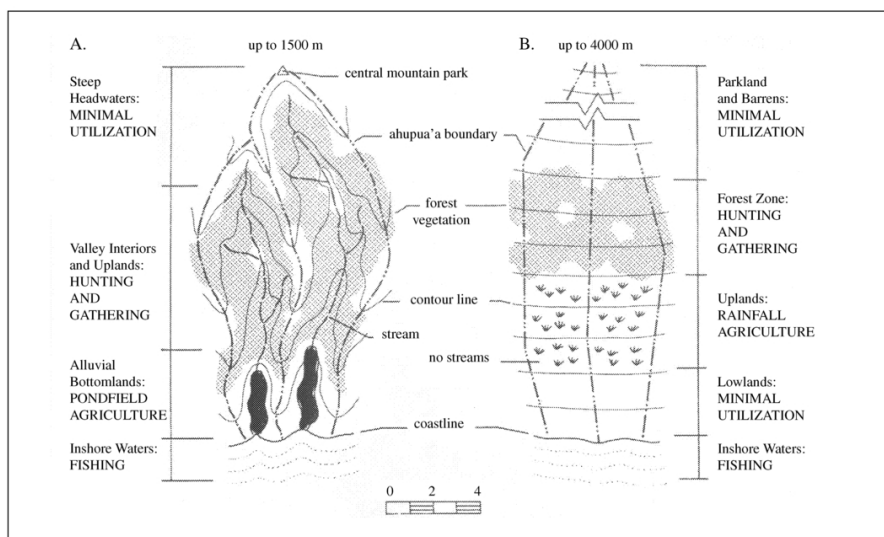


FIGURE 4.1 Schematic representation of *ahupua'a* land divisions. (A) Typical valley *ahupua'a*, Halelea District, Kaua'i; (B) typical upland *ahupua'a*, leeward districts, Hawai'i (scale approximate)

in kilometers).

tory, thus creating economically self-sufficient communities. By controlling a full valley catchment, an *ahupua'a* population was guaranteed areas of productive alluvial lands and, equally important, it held exclusive rights to the water necessary for irrigation. As already noted, boundary lines followed natural ridges, but near the sea these lines often deviated from the dominant or natural boundaries so as to divide critically productive sections between *ahupua'a*.

Each *ahupua'a* community maintained territorial control over substantial segments of each of the three subsistence resource zones. Although the sizes of these zones varied from one *ahupua'a* to the next, this variability corresponded closely to the population size of the *ahupua'a* (Earle 1978). In other words, *ahupua'a* populations and their associated resource zones were distributed such that each community might be self-sufficient, based on a generalized subsistence economy. This organization of subsistence economies would have minimized interdependence between communities; from a subsistence standpoint, the local Halelea community was structured similarly to a segmental society.

The Upland *Ahupua'a* of Leeward Districts, Hawai'i. The economic organization of the upland *ahupua'a* is best illustrated by the leeward districts of Hawai'i. On the island of Hawai'i, there were traditionally three major leeward districts—Kohala, Kona, and Ka'u. Although a study comparable to the Halelea project is unavailable, the general pattern of the upland *ahupua'a* and its relationship to the primary subsistence resource zones have been documented by extensive archaeological and ethnohistorical research.

The environment of leeward Hawai'i, in contrast to that of Halelea, is characteristic of a geologically recent region; the land surface slopes uniformly from the central volcanic mountains toward the sea. Vegetation zones correspond to the pattern of orographic rainfall determined by the combined effects of elevation and orientation to the trade winds (Carlquist 1970).

Three dominant resource zones may be recognized for the traditional subsistence economy of the leeward districts (Newman 1970; Fig. 4.1). First, since virtually no suitable water sources existed for irrigation, agriculture was restricted primarily to the intensive dryland farming of sweet potato and taro. The agricultural zone formed a band of upland soils limited largely by available rainfall (750-2000 mm annually). Second, fishing provided the necessary protein to complement the high caloric yields from root crop agriculture. This fishing was heavily concentrated in the shallow (less than 350 m) water zone immediately offshore. Third, at an elevation immediately above

the agricultural zone, there was a forest area used for extensive hunting and gathering and limited agriculture. Products procured in this zone were important for many uses including construction materials, variety foods, and medicines (Handy and Handy 1972).

Evidently these subsistence resource zones were functionally equivalent to those described for Halelea, but their geomorphological location was quite distinct. Since the Halelea pattern was determined by the hydrology of the central stream, the three resources zones were spatially contiguous and all represented in a compact area near the sea. In contrast, the absence of major stream drainages on leeward Hawai'i resulted in a vertical stratification of zones ringing the island at elevations determined by orographic rainfall.

Each district was subdivided into territorial units, the *ahupua'a*, which formed the basis for the local community economy. The primary boundaries of each *ahupua'a* were constructed perpendicular to the slope contours so as to define an arbitrary strip of land running from the central mountains to the sea including sections of each economic zone (Apple 1965). The most thorough archaeological data on an upland *ahupua'a* is available for Lapakahi *ahupua'a*, Kohala District, Hawai'i (Newman 1970; Rosendahl 1971). Lapakahi is a narrow (approximately 1 km) territorial strip running about 7 km from the rolling uplands (maximum elevation about 600 m) to the sea. Along the coast, there are scattered archaeological features and one major village site. Moving inland for the next 3 km, the dry slopes above the sea were apparently unused, until, at about 240 m elevation, agricultural features are encountered (Newman 1970). These agricultural features (low terraces, enclosures, mounds) extend to the rear of the *ahupua'a* and blanket virtually the entire inland section. This *ahupua'a* would, therefore, not have extended into the forest zone. Although Lapakahi did not control access to forest products, the territorial pattern is still one in which maximum resource diversity is included within the community boundaries.

On leeward Hawai'i, the economic resource zones are geomorphically distinct from Halelea, but the traditional pattern of community territorial organization was functionally similar. The boundaries of each community were laid out to create units that were largely replications of each other. For the most part, because communities had access to all basic economic resources (especially farming and fishing areas), each could maintain generalized subsistence production.

Community Social Organization

A most provocative aspect of the economic organization of the *ahupua'a* was

the apparent variability in household organization. As discussed at length elsewhere (Earle 1978), the social organization of Halelea commoners was founded on ostensive principles of household independence. Because of the compactness of resource zones in Halelea, households were able to establish themselves in locations proximate to the exploitative areas. Therefore, little need existed for household specialization, and evidence indicates that the household economy consisted of a balanced subsistence strategy including farming, fishing, and collecting.

In contrast, the economic zones of the upland *ahupua'a* on leeward Hawaii were spatially separate. In the wetter sections of Hawai'i, the subsistence zones were compressed within a few kilometers of the sea. Whereas in the drier areas like Kohala and Ka'u, the agricultural zone was at higher elevations, not contiguous to the fishing zone along the sea. At Lapakahi, the distance between zones is short enough that a population residing on the coast could farm the interior fields (Rosendahl 1971). However, this was apparently not the case for Ka'u.

According to Handy and Pukui (1972 [1958]), the spatial separation of subsistence resource zones in Ka'u resulted in economic specialization whereby inland households principally farmed and coastal households fished. This is clearly the type of situation that Service envisioned—environmental diversity causing economic specialization. In direct contradiction to Service's expectations, however, this economic specialization did not result in community specialization and political centrality. Rather, the response to specialization was an alteration of the local social organization such that the specialized households were integrated into a cognatic kin unit, the '*ohana*, which cross-cut the economic diversity. Arguing from informant data, Handy and Pukui (1972 [1958]) described the '*ohana* as consisting of several related households (*hale*) exchanging specialized products. "Between households within the '*ohana* there was constant sharing and exchange of foods and of utilitarian articles and also of services" (Handy and Pukui 1972 [1958]: 6). The striking conclusion is that, even in environmental conditions favoring specialization, the response is a change in local kinship organization rather than a political solution. The aim appears always to have been to minimize economic interdependence between community units.

Summary of Community Economy and Social Organization

For both the valley *ahupua'a* of Halelea and the upland *ahupua'a* of leeward Hawai'i, the territorial boundaries of the local community were laid out to minimize differences in the resources available to *ahupua'a* populations. Even

in the case where environmental diversity selected for economic specialization, the definition of the community territory and the internal organization of the community permitted a self-sufficient (generalized) community economy. In direct contradiction to Service's hypothesis regarding the integrative function of redistributive hierarchies, the subsistence economies of the Hawaiian chiefdoms were subdivided into repetitious community units. By minimizing the economic interdependence between communities, the structure of the local community largely eliminated the economic justification for a regional sociopolitical organization.

Economic Specialization Between Districts

The island territory of a Hawaiian chiefdom was divided into major administrative units, the districts (*'okana* or *kalana*), each consisting of a large pie-shaped segment subdivided into *ahupua'a* (9 *ahupua'a* in Halelea and 47 in Ka'u). As shown in the previous sections, within a district the *ahupua'a* were not specialized since territorial divisions were structured to create economically repetitious units. Between districts there were indeed marked environmental differences, but the local subsistence economies remained generalized and largely independent because alternative strategies were available.

The trade wind and orographic rainfall pattern creates a most pronounced environmental contrast between the leeward (dry) side of an island and the windward (wet) side. Although this is an environmental situation where economic specialization might be expected, there is little evidence for such a response. Aboriginally, the effects of this environmental variability were mitigated by two aspects of the subsistence economy: (1) irrigation practices, and (2) a variety of primary subsistence crops. First, taro was grown as the dominant crop on both the windward and leeward sides wherever water was available for irrigation. Although the permanent streams used for irrigation are most common to windward, runoff from the heavy mountain rainfall feeds many permanent streams to leeward as well. Some of the most extensive irrigation complexes were actually in leeward areas, such as Waimea, Kaua'i, and Waikiki, O'ahu (Handy 1940; see [Chapter 5](#)). Second, because taro and sweet potato were interchangeable staple crops in the Hawaiian diet, considerable flexibility existed in the dryland farming methods used in areas without permanent streams. The shorter growing season and reduced water requirements (minimum 750 mm) of sweet potato made it well suited to the restricted, seasonal rainfall of the leeward coasts. Whereas taro, with higher water requirements (minimum about 1500 mm), was ideal for the windward

districts. Thus, farming was viable in both high and low rainfall areas because of both irrigation and a flexible dryland agriculture. Additionally, although there was some variability in fishing potential between districts (Newman 1970), it is equally clear that fishing was practiced effectively in all areas. In sum, despite environmental contrasts, the districts were able to retain generalized economies based on a balance between agriculture and fishing, and this condition would have greatly reduced requirements for interdistrict trade. Again the expectations of Service's hypothesis are contrary to the minimal specialization observed in the Hawaiian case.

To be sure, some interdistrict trade existed. Specialized products such as mats, *tapa* cloth, and various woods were often localized and were exchanged between districts (Handy and Handy 1972: 314-315). For example, Ellis (1963 [1827]: 229-230) described a traditional Hawaiian trade "fair" at which people from the southern districts of Puna and Ka'u exchanged dried fish, mats, and a particular *tapa* for pigs, dried taro, other *tapa* and mats, and tobacco from the northern district of Hamakua. The significant point of this exchange is not its simple presence; extensive intergroup exchange exists in all societies. Rather, it is that this exchange was not channeled through the redistributive hierarchy. Exchange was direct barter between primary participants. Representatives of the chiefs were present, but they acted only as arbitrators and tax collectors.

In sum, the major environmental differences among the districts of a Hawaiian chiefdom were largely overcome by different options in the subsistence economies. The districts retained their primary self-sufficiency by stressing a balanced farming-fishing subsistence economy, and interdistrict trade was relatively rare. Exchange in specialized products that did take place between districts was handled by a direct barter system. As is shown in the following section, the channeling of goods through the redistributive hierarchy fulfilled a very different function from the integration of specialized economic units.

Economic Functions of the Redistributive Hierarchy

The redistribution that did exist on the Hawaiian Islands involved the massive mobilization of goods at periodic ceremonial collections directed by the elite hierarchy. The most striking collections were associated with the annual *makahiki* ceremonies (Malo 1951 [1898]: 141-159; I'i 1959: 70-77; Beckwith 1932). During this ceremonial period, the god Lono, represented as a stick figure, was sent on a tour around the islands. At each *ahupua'a*, the god would halt and receive the obligatory offerings from the local population. The size of this offering was carefully examined, and a niggardly *ahupua'a* was first asked

to fulfill its total responsibility and then, if it failed to meet this obligation, it could be plundered. The goods collected during the *makahiki* were mainly raw materials and commodities used by the elites and their households; the perishable food collected was used to feed the chiefs and those directly involved in the collection (Malo 1951 [1898]: 143, 145). The commodities (*tapa*, fishing gear, etc.) and preservable food (hard *po'i* and dried fish) were then deposited in a central storehouse for the personal and political uses of the paramount chief (I'i 1959: 121; Malo 1951 [1898]: 195).

Additional collections preceded the large feasts associated with special occasions, such as life-crisis ceremonies and temple constructions associated with the paramount chief. During these feasts, a significant portion of the amassed food, which was difficult to store in any case, was distributed directly to the commoner population. The *makahiki* or other regional collections, however, could not have served to integrate a regionally specialized economy. Economic specialization of local communities would have required a frequent and regular exchange between them. (Typically such exchanges take the form of a regional market or monthly fairs as in modern peasant economies.) Neither in Hawaiian society nor in the other Polynesian societies is there evidence for such regularity or predictability in the feasting. Sahlins (1958) lists only three general, chiefdomwide collections a year; in reviewing the traditional histories (e.g., Malo 1951 [1898]; I'i 1959; Beckwith 1932), only two regular collections a year were noted and both of these took place in a single month. Additional feasts were probably irregular and relatively infrequent. In short, the collections and related feasts were not a viable means to organize locally specialized subsistence economies. A reexamination of mobilization associated with other chiefdoms would most probably yield similar conclusions. Redistribution is not adequate for the integrative economic function proposed by Service.

The question remains as to what were the economic functions of redistributive mobilization in Hawaiian society? The three primary applications for goods mobilized during the collections were (1) support of the elite population; (2) establishment and maintenance of political relationships required by intensive intra- and intergroup competition; and (3) capital investment through the management of local economic strategies, like irrigation and aquaculture, used to maximize income flow to the elites (Earle 1978). The redistributive hierarchy of the Hawaiian chiefdom functioned to mobilize goods to support the operation of the political superstructure; in short, redistributive mobilization was a form of taxation.

To be sure, important benefits from redistribution may have returned to the local subsistence economy. First, as is argued clearly by Gall and Saxe (1977), increased production intensity results in an increased economic insecurity. For

the Hawaiian Islands, the irrigation systems were subjected to periodic destruction from stream flooding and tidal waves. Since such stochastic events occurred usually less than once every 20 years for a specific community, a purely local adaptation to such disasters was simply inefficient (Earle 1978). Rather, the Hawaiian elites were under obligations of generosity that required them to support a destitute population and aid in reconstruction. Second, capital investment in irrigation systems and fishponds appears to have significantly increased the efficiency of agricultural production. Irrigated taro was the strategy selected for wherever environmental conditions were favorable (Earle 1978). Such benefits are, however, hardly sufficient cause for the evolution of redistributive hierarchies. Indeed, arrangements like the regional reciprocal networks of acephalous societies (Dalton 1977) offer alternative mechanisms for both security and capital formation.

An explanation for the development of redistributional mobilization should evidently be subsumed by a general theory of social stratification. The increased "surplus" associated with mobilization is used to support an elite population removed from subsistence activities but performing various control functions. Social stratification involves the building of a maximizing political economy to mobilize surpluses from the underlying subsistence economy (Chapter 1; Earle 1978). The political economy is self-amplifying as income/revenue is used partially to expand productive capacity. Such a positive feedback system is inherently developmental and will continue to expand until external factors (like island size in Polynesia) inhibit its growth. An explanation for redistributive hierarchies will require (1) an explication of the elaboration and institutionalization of the maximizing political economy and (2) an enumeration of the possible environmental and social conditions inhibiting its growth.

Summary

This chapter has examined redistribution and offered a four-part typology (leveling mechanisms, householding, share-out, and mobilization) to characterize the very different economic institutions subsumed by the cover term. Within the typology, redistribution in the form of mobilization is seen as basic to chiefdoms and states.

Service (1962) has offered a hypothesis that would explain the evolution of chiefly redistributive hierarchies as a response to environmental variability. An examination of the aboriginal Hawaiian chiefdoms suggests that this hypothesis should be rejected for the following reasons:

1. The definition of the community territory and the internal organization of the community population permitted a self-sufficient (generalized) economy.
2. Major environmental diversity among districts was largely resolved by different options in the subsistence economy and not by extensive exchange.
3. Exchange in specialized products was handled by kin obligations within a community and by direct barter between districts. Goods channeled through the redistributive hierarchy, in contrast, were used primarily to finance activities directed by the elites.
4. The long-term periodicity and irregularity of mobilizations were inadequate to organize locally specialized subsistence economies.

Redistributive mobilization served to finance the political and private activities of an elite population. In sum, an explanation of redistribution/mobilization is inextricably bound to the evolution of sociopolitical systems of stratification.

Some Recent Work

Since the original publication of this chapter, useful work has been written on redistribution. Halperin (1994) considers Polanyi's original concept of householding and differentiates it clearly from redistribution. Using Appalachia, she shows how householding operates to meet everyday subsistence needs of rural populations within states. The goal of householding is self-sufficiency as Sahlins (1972) discusses for the Domestic Mode of Production ([Chapter 1](#)).

Whether or not redistribution in chiefdoms and states served to deal with household risk continues to be an open question. In *Bad Year Economics* (Halstead and O'Shea 1989), contributors consider the alternative buffering mechanisms (mobility, diversification, storage, and exchange) used by human societies to handle unpredictable variation in food availability. Interestingly, the authors refrain from even referring to redistribution. Evidence from the Inka ([Chapter 8](#)) indicates that state-managed storage and redistribution did serve occasionally to handle local shortfalls in food supplies. Redistribution can be used to buffer against risk, but this use was apparently secondary to finance in chiefdoms and state.

The identification of central storage facilities to document staple finance is discussed for the Inka in [Chapters 8](#) and [10](#), for the Iron Age hill-fort

chiefdoms of southern England (Bradley 1991; Gent 1983), and elsewhere. In England, for example, defended settlements had many aboveground storage structures. Presumably these held cereals used for household subsistence and for political finance in small-scale chiefdoms ([Chapter 13](#)).

Across the Hawaiian chain, considerable work has documented the nature and extent of exchange in stone adzes (McCoy 1977; Cleghorn 1986) and basaltic glass (Weisler 1990), both materials that had quite limited distributions requiring exchange. Was extraction and distribution of these materials centrally managed by Hawaiian chiefs? Cleghorn (1986) describes how the work teams at the isolated Mauna Kea source included skilled craftsmen, and it is possible that these craftsmen were attached to chiefs. But Lass (1994) documents how many sources of basalt suitable for the adzes were available and used, such that it is unlikely that the material could have been easily monopolized. Through time, if control became exercised by chiefs, we might expect that the best and most easily controlled sources, such as Mauna Kea, would come to dominate the stone assemblage, but Lass shows that no such trend exists. Although exchange in stone adzes and basaltic glass was practiced, it probably did not involve chiefs, except perhaps secondarily. Because of the alternative sources and the technological simplicity of adze production, these products would not have served as a basic currency of finance (compare the flint daggers vs. the bronze swords in the Danish case; [Chapter 12](#)). Rather stone tools in small numbers were apparently exchanged reciprocally and bartered regionally to meet specific production needs, some involving chiefs and highly skilled attached specialists ([Chapter 6](#)).

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Prehistoric Irrigation in the Hawaiian Islands

An Evaluation of Evolutionary Significance

To support the expanding population and political economy of the Hawaiian chiefdoms required massive intensification of subsistence practices. Intensification followed several pathways including a shift from fishing to farming (Kirch and Kelly 1975), the development of aquaculture with many fish ponds (Kikuchi 1976), the building of extensive dryland field areas (Rosendahl 1971), and the construction of numerous irrigation systems both large and small. This chapter considers how the farmers and chiefs of the ancient Hawaiian Islands implemented irrigation as part of agricultural intensification. Intensification involved the construction of major new production facilities, the creation of a clearly defined land tenure, and the production of surplus. Chiefs organized the labor of their followers to produce a substantial surplus that fueled their political objectives.

During the fifty years following initial contact (1778), visiting Western explorers and missionaries described in considerable detail the layout and operation of traditional irrigation agriculture through the islands. Taro (*Colocasia esculenta*), the primary staple crop of the Hawaiians, was commonly planted in irrigated pondfields similar to the rice pondfields of Southeast Asia. The Western observers were clearly impressed by the extent and ingenuity of the Hawaiian taro plantations. The pondfields, which often blanketed the broad alluvial plains near the sea, presented a neat pattern of fields divided by their earth and stone embankments. In addition to the taro in the flooded fields, fish were raised in the water and the embankments were planted with dryland crops of banana (*Musa* sp.), sugarcane (*Saccharum officinarum*), and *ti* (*Cordyline terminalis*). The intensity and diversity of these pondfield must have appealed to the Westerner's notion of enterprise and industriousness. During a visit to O'ahu in 1816, Kotzebue described the irrigation as follows:

The artificial taro fields . . . excited my attention. Each of them forms a regular square of 160 feet, and

is enclosed with stone all around like our basins. This field, or rather this pond, for such it really may be called, contains two feet of water, in the slimy bottom of which the taro is planted, as it does not thrive except in such a wet situation; each pond has two sluices, to let in the water on one side, and out again at the other, into the next field, and so on. The fields are gradually lower, and the same water which is led from an elevated spring or rivulet, can water a large plantation. . . . In the spaces between the fields, which are from three to six feet broad, there are very pleasant shady avenues, and on both sides banana and sugar-canes are planted. The taro fields afford another advantage; for the fish which are caught in distant streams thrive admirably when put into them. [Kotzebue 1821: 340]

These protohistoric irrigation systems consisted of three essential components—the initial water source diversion, the irrigation ditch network, and the agricultural pondfields. Hawaiian irrigation depended on permanent water sources to provide water for the continuous, year-long cultivation of taro. Typically, water was diverted from a small stream by a stone percolation dam and then conveyed through the primary ditch to the farming area. Among the patches, water was directed through secondary ditches and fed to the pondfields, which were water-filled basins surrounded by earth and stone bunds. By keeping water constantly circulating through the ponds, an optimal artificial environment was created for taro. The water maintained the hydromorphic soils, brought in fresh alluvium, and acted as a mulch to inhibit weed growth. On the alluvial flats, pondfields were often broad and fairly regular; while in steeper terrain, pondfields were smaller and rested on terraces carefully fitted to the irregular topography.

The traditional irrigation of the islands has been selected for careful evaluation in this paper because of its recognized importance in aboriginal Hawaiian society and because of the proposed importance of irrigation in complex societies around the world. On the Hawaiian Islands, irrigated taro agriculture was distributed aboriginally wherever suitable conditions existed and it dominated the subsistence economy on Kaua'i, O'ahu, and Maui. In key zones like Waikiki on O'ahu, or Hanalei on Kaua'i, irrigated agriculture created conditions favorable for a highly productive subsistence economy and a locally dense population.

Irrigation has also been singled out by a number of researchers as a key factor in the evolution of complex societies and the significance of irrigation has become the center of a long-standing anthropological debate (Steward 1955a; Wittfogel 1957; Leach 1961; Millon 1962; Price 1971; Lees 1973; Mitchell 1973; Downing and Gibson 1974; Earle 1978). In this chapter, I discuss two potential implications of irrigation for social evolution, namely, how irrigation serves as a major capital improvement to agricultural land permitting increased food production, and how irrigation may require a complex, large-scale technology favoring centralized sociopolitical organization. The important point here deals with both how labor is organized in the construction of irrigation facilities, and correspondingly who determined the

use of the produce.

Although ethnohistorical and ethnographic sources provide information on traditional irrigation (Handy 1940; Handy and Handy 1972; Earle 1978; Peterson 1972), this chapter focuses on the archaeological evidence because the descriptions of distribution, size, and complexity of irrigation available in the archaeological literature permit an evaluation of irrigation's evolutionary significance. The chapter is divided into three sections. First, the distribution of irrigation through the Hawaiian Islands is described and an attempt is made to identify environmental factors influencing the distribution. Second, data on the physical dimensions and construction techniques of an irrigation system are summarized. Third, two contrasting models of the prehistoric development of Hawaiian irrigation are outlined. Throughout the chapter, the paired goals are to summarize existing knowledge on traditional irrigation and to evaluate its possible significance for the evolution of complex society in the islands.

Distribution of Hawaiian Irrigation Systems

Irrigation is important for understanding the prehistoric development of Hawaiian society and how this development was channeled by existing environmental conditions. Irrigation agriculture posed both a potential for and a limit to the elaboration of aboriginal Hawaiian chiefdoms. In turn, the possibilities to construct irrigation complexes were governed by topographic and climatic circumstances. Before discussing the distribution of irrigation through the Hawaiian Islands, the importance of this distribution is emphasized by showing the linkage that irrigation forms between environmental conditions and social development.

Irrigation involves alterations to the environment so as to create conditions favorable for agricultural production. The construction of an irrigation system with its associated terracing is a major capital improvement to farmland, which permits increased agricultural output (Price 1971). Traditional Hawaiian irrigation created a compact configuration of microenvironments suitable for wet taro, various dryland crops, and fish. A society practices irrigation for at least three reasons: (1) irrigation often increases the efficiency of production in comparison to alternative dryfarming methods; (2) irrigation permits increased output to support expanded population densities; and (3) irrigation's capacity for intensification permits a surplus product to fulfill political obligations and other nonsubsistence requirements. In the aboriginal Hawaiian Islands, all three factors appear to have selected for irrigation as the dominant agricultural strategy in areas where it was feasible. In comparison to dryland farming,

irrigated pondfield agriculture was apparently more efficient (more suited for long-term intensification and surplus production) than dryland alternatives based on the evidence that, where both strategies were possible, irrigation was preferred (Earle 1973: 63-67). Prehistoric population density (Schmitt 1971) was apparently also highest for those islands, namely, Kaua'i, O'ahu, and Maui, where irrigation was most extensive, and many of the largest population aggregates such as at Waikiki on O'ahu or Lahaina on Maui were heavily dependent on irrigation agriculture.¹

Perhaps most important for establishing irrigation as the dominant agricultural strategy in the Hawaiian Islands was its importance in the political economy. Although this relationship between irrigation and the support of political activities in Hawaiian chiefdoms is discussed at length elsewhere (Earle 1978), I summarize the relationship briefly here. Irrigation was constructed under the direct supervision of the *konohiki*, the local land manager for the chiefly landowner. An individual commoner received rights to land in exchange for his assistance in building the irrigation and for a continuing obligation to work sections of the system, from which staples were designated for the chiefs. The relationships amounted to a rent paid by the commoners and provided the surplus for staple finance on which the Hawaiian chiefdoms were based.

An irrigation system was thus a source of revenue for its owner (a chief) and the construction of a new irrigation complex was one way a chief could increase his income and labor force. A pervasive objective of a Hawaiian chief was to maximize his income, which he used to support his family and retainers and to participate in the highly competitive political arena of the islands. A portion of a chief's income was reserved for use as capital investments aimed at further expansion of his revenues. The result was a positive feedback, growth-oriented economy in which irrigation played a central role. Because of its high productivity and capacity for intensification, irrigation was a suitable vehicle for expanding local production and generating new surpluses. Theoretically at least, a chief would expand local production until further expansion would not generate new income; this limit was largely determined by the local availability of resources.

The implication of this positive feedback economy is a developing society. Increased revenues for elites served both to expand the size of polities through conquest warfare and to support increasing numbers of elite individuals and attached specialists. Restrictions to the elaboration of such a society were established by limits to available resources, especially land and water suitable for irrigated agriculture in the Hawaiian case. Thus to understand the evolution of Hawaiian chiefdoms, it is important to understand the conditions that encouraged and limited the construction of traditional irrigation through

the islands. In the following sections, the distribution of irrigation systems during the protohistoric period is outlined, and, from this distribution, it is possible to suggest how specific geological and climatic conditions of the islands channeled the development of traditional irrigation and by extension influenced the evolution of Hawaiian chiefdoms.

The protohistoric distribution is determined from published evidence for traditional irrigation complexes. Because the available archaeological evidence does not usually permit the dating of irrigation systems, it is assumed here that traditional Hawaiian irrigation was at its maximum extent at time of contact, meaning that most traditional irrigation was being used at this time. This assumption has been made to allow a reconstruction of the *general* pattern of distribution, despite the fact that detailed studies that concentrate on the problem of dating irrigation complexes are clearly needed.

At present, the two available sources of information on the distribution of traditional irrigation are the islandwide reconnaissance surveys of archaeological and historic sites, and detailed surveys and excavations that concentrate on particular traditional communities (*ahupua'a*). The reconnaissance surveys provide the broadest information on the distribution of irrigation systems. Based on data collected early in this century, these surveys are aimed at describing the location of major archaeological and historical sites. Published surveys are available for Kaua'i (Bennett 1931), O'ahu (McAllister 1933), Moloka'i (Summers 1971), and Lana'i (Emory 1924). Many irrigated terrace complexes were described in these surveys, but the data appear to be selective. More comprehensive information is available in Handy (1940: 58-130), who synthesizes the available information on the location of traditional irrigation for all the islands. This information combines data from archaeological surveys, ethnohistorical documents, Handy's personal inspections, and numerous discussions with local informants. Although there are difficulties in using these data, Handys research is employed here to map the approximate extent of irrigation agriculture at time of contact.

A more detailed understanding of the variability, distribution, and extent of irrigation within specific *ahupua'a* can be obtained from recent archaeological studies with ecological orientations.² These studies concentrate on the archaeological evidence in several historical communities that represent contrasting environmental conditions for agriculture, and it is possible to use their information to investigate how traditional Hawaiian farmers made use of different topographic and hydrologic situations. Particularly, these studies show what environmental conditions were suitable for irrigation agriculture and to some degree how the form of irrigation systems varied to make use of the different situations.

To show how environmental conditions channel the form and intensity of

traditional Hawaiian agriculture, I begin by outlining the dominant climatic and geological processes that shape the islands' environment (Carlquist 1970). The Hawaiian Islands were formed by volcanic eruption and then gradually sculpted by the incessant erosion caused by high rainfall. Through time, valley networks formed and, on geologically mature islands, major streams radiated from the central mountains toward the sea. When fully developed, major valleys consist of a narrow interior canyon with many small side valleys, a broadening central section where the stream frequently meanders or becomes braided, and a broad alluvial plain near the sea that frequently extends across several valley mouths. This distinctive sectional pattern is not found in geologically young areas where streams are either absent or limited to narrow gulches. Wave action also erodes coastlines along the windward shores and may truncate valley formation. The key point is that island topography varies by geological age, with the oldest islands, such as Kaua'i, located to the west and the youngest, Hawai'i, to the east.

Island hydrology reflects the orographic pattern of rainfall (see Carlquist 1970: 66-77). Corresponding to a prevailing northeastern trade wind, the islands' climate and plant communities show a marked windward-leeward, wet-dry contrast. As the oceanic winds encounter the islands' landmasses, air is forced upwards, cools, and condenses to produce rainfall. Annual precipitation is highest on the windward coasts (greater than 1000 mm/year) and in the central mountains (up to 10,000 mm/year). These mountains then act as an effective barrier to moisture on the leeward coast, where annual precipitation is usually 500-1300 mm. The height of an island's central mountain is critical for determining this orographic pattern. Where mountains are less than 1000 m, condensation is reduced and rainfall approaches that expected in the open ocean. In addition, some islands have generally reduced rainfall because the island lies in a rainshadow created by a larger island to windward.

As is shown in the following discussion, factors of geology and hydrology acted to channel the development of irrigated agriculture in the islands (Hackenberg 1972). The political development that relied on the irrigation was thus also constrained by the environmental options. A three-part classification referring to the extent and intensity of irrigated agriculture is used to show how the distribution of irrigation was governed by specific environmental conditions. The classification is as follows:

1. *Major zones of irrigated agriculture* were located where extensive alluvial soils and abundant water permitted the development of extensive areas of taro farming using multiple water sources. In major zones, there were typically more than 40 ha of irrigated taro, watered

by several ditches. These zones were always associated with extensive alluvial floodplains, which are found near valley mouths and frequently extend across several valleys to create a broad, nearly continuous farming area.

2. *Secondary zones of irrigated agriculture* were located where suitable soil–water conditions permitted extensive areas of irrigated taro but where these conditions were somewhat localized and fragmented. Typically, a secondary zone contained between 10 and 40 ha of irrigated taro, limited to a single valley and separated from adjoining similar valleys. These zones were associated with fairly large but isolated coastal floodplains.
3. *Zones of scattered irrigated agriculture* were located where suitable soil–water conditions were dispersed and highly localized and where irrigated agriculture was of secondary importance in the subsistence economy. In such situations, a valley contained less than 10 ha of irrigated taro, which was usually fragmented into multiple small irrigation systems. These zones seldom contained extensive floodplains and the alluvial deposits used were broken into small land benches along the main and subsidiary streams.

The purpose of this classification is to identify areas that supported the most extensive development of irrigation agriculture with associated potential for high population density and surplus production. The actual pattern of irrigation represents a continuum that has been broken arbitrarily to illustrate how the distribution and intensity of traditional irrigation corresponds to a number of environmental–geological conditions. This typology does not correspond well to significant differences in the features of irrigation but only to the extent of area farmed. The features of irrigation, described in the next section, show few significant differences between the different types of zones. The basic technology—dam, ditches, and pondfield terraces—is similar in all zones. There are, however, some differences in the scale of irrigation systems. The largest (>10 ha) are found only in major zones. Smaller systems occur commonly in all zones. In zones of scattered irrigation agriculture, most systems are less than one hectare in size.

Major Zones of Irrigated Agriculture

Eleven areas have been identified as major zones of irrigated agriculture during the protohistoric period (Fig. 5.1). These are located primarily in geologically mature regions on the islands of Kaua'i (Halelea, Waimea,

Hanapepe), O'ahu (Koolau piko, Honolulu-Waikiki, Ewa-Pearl Harbor, and Wai'anae), and western Maui (Wailuku, Lahaina). In geologically less mature regions, major zones are found only in two unique topographic situations at Keanae-Wailua on the northeastern coast of Maui and at Waipio-Waimanu on the north coast of Hawai'i.

The locations of these major zones do not conform simply to the windward-leeward, wet-dry contrast discussed earlier. Four locations are on windward northern coasts where rainfall exceeds 1000 mm at sea level; five are located on leeward southern coasts where rainfall is less than 1000 mm; and one (Wailuku) is on the northeastern coast of west Maui but in a rainshadow where annual precipitation is only 750 mm at sea level. The existence of extensive alluvial plains was apparently more significant than rainfall in determining the distribution of major zones. These major zones are characteristically found where bays or barrier reefs offer protection from the erosion caused by wave action. Association of major zones with protected bays is common, as for Hanalei Bay in Halelea or Pearl Harbor in Ewa. Viewed from this perspective, the consistent development of major zones in leeward regions (where it might be expected that water would be limiting) probably reflects the extensive formation of alluvial deposits in situations where wave action is less severe. For example, the

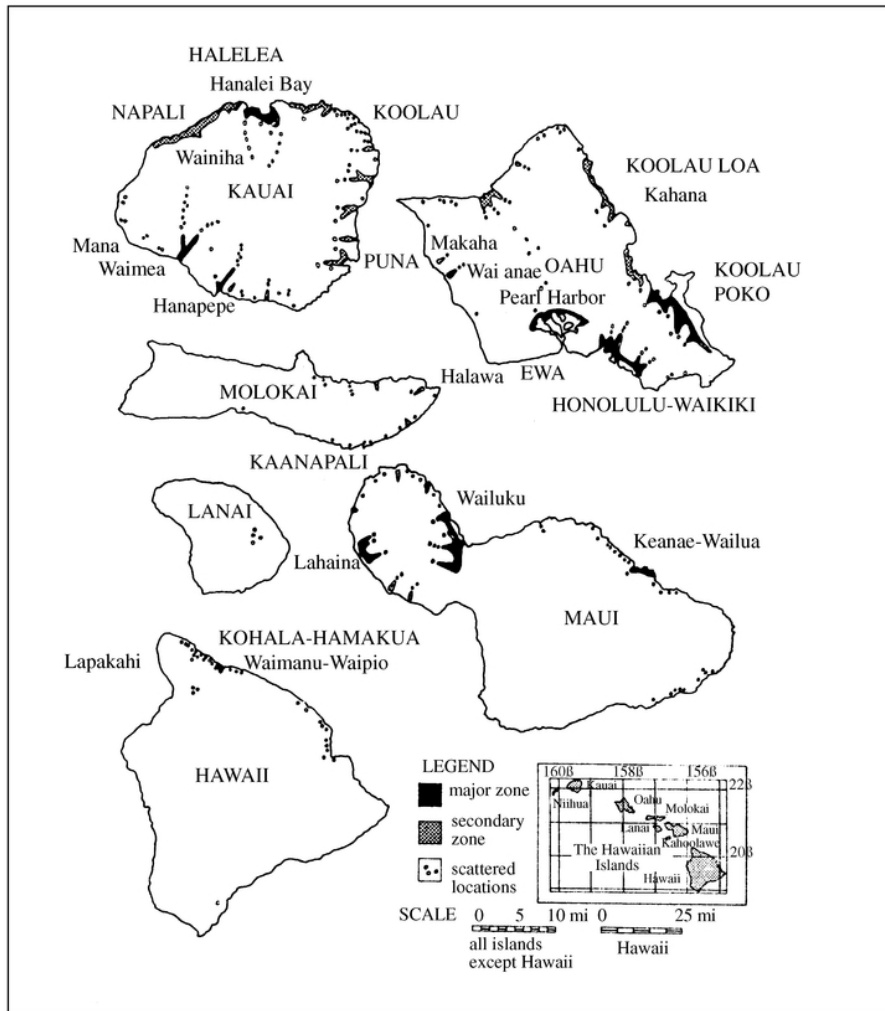


FIGURE 5.1 The Hawaiian Islands, showing the distribution of zones of irrigated taro agriculture.

major zone of Wai'anae on leeward O'ahu is dependent on such extensive alluvium (R. Green 1980). Windward areas, however, seem most favored for major zones in geologically less mature regions like eastern Maui and Hawai'i, where the restricted size of catchment areas makes higher rainfall necessary to provide sufficient water. Major zones are absent on the lower islands of Moloka'i, Lana'i, and Ni'hau, where rainfall and catchment sizes are both limited.

The first detailed archaeological study of a major zone of irrigated agriculture is that for the Hanalei Bay-Wainiha zone on the northern coast of Kaua'i (Earle 1973, 1978). Another summary of extensive irrigation is available for Wai'anae on O'ahu (R. Green 1980). These studies were based on extensive archival research on the historical irrigation operating in 1850; on Kaua'i,

archaeological research was conducted on several medium-sized systems in the *ahupua'a* of Wainiha and Ha'ena. The central section of this zone is in the four *ahupua'a* of Hanalei, Waioli, Waipa, and Waikoko, which converge on Hanalei Bay. This broad but protected bay is bordered by a nearly continuous alluvial plain that historically, as now, supported a major taro industry. There are multiple water sources including three main streams (Hanalei River, Waioli, and Waipa) and several small streams and springs. In 1850, the coastal alluvium surrounding the bay was farmed by eleven separate systems with a total area of at least 42.6 ha. For traditional Hawaiian irrigation, these were fairly large (average 3.9 ha; largest, 19.1 ha). The primary water sources for these were the main streams (5 systems; 66% of irrigated land) but additional sources were provided by tributary streams (1 system), small independent streams (1 system), springs (3 systems), and one undetermined source. Typically, a large irrigation system tapped a main stream or one of its tributaries in the narrow valley section inland from the plain. The primary ditch then channeled water along the valley side and around the ridge that formed the inland edge to the plain. Secondary ditches conveyed water to the pondfields and small fishponds on the plain below. Additional smaller systems tapped the main stream and irrigated alluvial deposits found on either side of the valleys. These were quite simple, consisting of a primary ditch that ran along the valley side and that fed water to pondfield terraces located between the ditch line and the stream. In swampy areas in the coastal plain, springs fed directly into pondfield clusters and larger fishponds.

In addition to the nearly continuous development of irrigated taro farming on the coastal plain of Hanalei Bay, smaller irrigation systems were located along the narrow interior sections of the region's main streams and along several lesser streams (Bennett 1931: 134, 136; Earle 1978). These were small (less than 1 ha) and terraced to make use of slopes with a grade up to about 15 percent. Pockets of alluvial soil located in bends of the main stream, junctures of the main stream with its tributaries, and benches along tributaries were farmed; sources for irrigation water were both the main stream and its tributaries.

Irrigation in major zones typically shows a similar contrasting interior vs. coastal pattern. Near the coast, relatively large irrigation systems were used to farm the extensive alluvial deposits of the coastal plain and lower valley segment. To the interior, small terraced farms were scattered along the streams in the narrow canyons. Although the concentrated coastal development apparently dominated the production of irrigated taro, interior irrigation was located virtually wherever suitable pockets of alluvial soil existed, and these would have offered additional productive area to the local farmers.

Secondary Zones of Irrigated Agriculture

Secondary zones of irrigated agriculture are found on the geologically mature sections of the islands of Kaua'i, O'ahu, and western Maui, and in localized portions of eastern Moloka'i (Fig. 5.1). There is no apparent association of the secondary zones with either windward or leeward coasts. Rather, secondary zones are distributed similarly to major zones in areas generally well suited for irrigation but where limited availability of either alluvial soils or water has restricted development of extensive irrigation complexes.

There are several important secondary zones located on windward coasts, like Napali on Kaua'i, Ko'olauloa on O'ahu, and Ka'anapali on western Maui. Although these regions are geologically mature with well-formed valleys and ample water, severe wave action has apparently eroded the shoreline and caused valleys to be relatively short and narrow, often opening almost directly onto the sea. Without extensive coastal plains, alluvial deposits are restricted to smaller coastal deposits and to the benches along the streams, so irrigation systems tend to be smaller and more fragmented than in major zones. Multiple terraced systems were constructed wherever suitable soil pockets were located, but the total extent of irrigation was limited by the restricted availability of alluvial deposits.

Secondary zones of irrigated agriculture are also located in geologically less mature, windward regions like the Puna and Koolau Districts of Kaua'i. Although water is ample for extensive irrigation, alluvial deposits are limited, reflecting the lack of well-developed valleys with broad alluvial plains. Generally, irrigation systems were fairly small and restricted to the relatively narrow valleys with their scattered alluvial deposits; locally, however, coastal plains are associated with the larger streams where more extensive irrigation was constructed.

Secondary zones are also frequently located on the drier south and western coasts of Kaua'i, O'ahu, western Maui, and Moloka'i. These zones are located in geologically mature regions where major zones of irrigated agriculture are regularly found; however, the secondary zones are generally associated with valleys with smaller catchment sizes. On these leeward coasts, the availability of water was apparently a primary constraint to the development of irrigation and major zones were restricted to the valleys that extended into the central mountain regions with high rainfall. In contrast, the valleys with secondary zones did not penetrate to areas of high rainfall found in the central mountains.

There are three excellent investigations of *ahupua'a* valleys characteristic of secondary irrigation zones. These are the windward valleys of Halawa, Moloka'i and Kahana, O'ahu and the leeward valley of Makaha, O'ahu. The

valley environments and internal distribution of irrigation for these communities are presented in the following brief discussions.

Halawa, Moloka'i. The Halawa valley is located on the eastern tip of Moloka'i. The lower valley, which was investigated archaeologically, is about 3 km long and 0.5-1 km wide, while the valley drainage extends about 4 km farther into the central mountains of eastern Moloka'i (Kirch 1975: 9). Along the lower valley near the sea, there is a fairly broad alluvial deposit suitable for irrigated taro agriculture, and pockets of additional alluvial soil are found along the stream and its tributaries as the valley narrows to the interior. At its mouth, a bay offers some protection from wave action but there are no major reefs. Considering the valley's windward exposure, rainfall is limited (500-1500 mm in the lower valley).

Riley (1975: Table 26) describes the archaeological and historic evidence for nine irrigation systems³ with a total area of 22.4 ha. The four largest systems (av. 4.85 ha; Complex Numbers 1 and 2) were located on fairly extensive alluvial deposits along both sides of the stream near the sea. The other five systems, which were considerably smaller (av. 0.6 ha), were located on the benches along the main stream and its tributaries in the narrow part of the lower valley.

Kahana, Oahu. The Kahana valley is located on the windward, northeastern coast of O'ahu in the Ko'olaupia District (Hommon and Barrera 1971: 1-2). The valley drainage can be subdivided into two sections—the broad alluvial floodplain flanking the main Kahana stream near the sea; and the narrow interior valley of the two principal tributaries that extend from their junction at the head of the alluvial plain about 4 km to the central ridge of the Koolau mountains. Alluvial soil deposits are concentrated in the fairly broad, continuous floodplain, but additional alluvial deposits are distributed along the tributary valleys and their side valleys. At the mouth of the Kahana stream is the protected Kahana Bay, but it has no major reefs. Rainfall in the valley catchment is high—about 1800 mm at the shore to 6500 mm at the rear ridge—and water availability is ample.

The distribution of irrigation in the Kahana valley shows a marked difference between the lower and upper valley sections. Associated with the broad floodplain in the lower valley, there is historic evidence for two irrigation systems of good size that flanked either side of the Kahana stream (Hommon and Barrera 1971: Fig. 8); however, no published estimates of the size of these are available. Along the two main tributaries in the upper valley, Hommon and Barrera (1971: Table 3) record 19 sites of former irrigated taro terraces. These sites are small (1-11 terraces; av. 5.7 terraces or about 0.05 ha).

The researchers estimated that all small irrigated terrace sites provided only 1.08 ha of agricultural land (Hommon and Barrera 1971: 43) and this total area would have been small in comparison to the area provided by the two lower valley systems. In the upper valley, the majority of terraces recorded (93%) were located on small alluvial pockets along side drainages and would have received their water through short ditches tapping the many side streams. The scarcity of sites along the alluvial benches of the main tributaries may reflect either a preservation problem or an avoidance of the flood zone (Hommon and Barrera 1971: 49). Present evidence certainly shows the potential to develop multiple small irrigation systems in the scattered alluvial deposits characteristic of the narrow interior valleys.

Makaha, Oahu. The Makaha valley is located on the leeward, southwestern coast of O'ahu in the Wai'anae District. The valley can be divided into two sections—the lower valley, which extends about 3.9 km inland from the sea and is a broad, gently sloping plain about a kilometer wide along the Makaha stream; and the narrow upper valley, which extends an additional 4.1 km to the Wai'anae–Wailua mountain ridge. Alluvial soils are found along the lower stream and in pockets in the upper valley, although there is apparently no coastal alluvial floodplain such as characterized Halawa and Kahana. Rainfall in the valley catchment is somewhat limited—about 500 mm at the coast to a maximum 2000 mm at the mountain ridge—and water availability may have been restricted.

Similar to Halawa and Kahana, there is a marked contrast in the use of irrigation between the upper and lower valley. Because of modern land uses, it is difficult to assess the importance of irrigation in the lower valley, but there is historic evidence for one major irrigation system (R. Green 1980). In the upper valley, Hommon (1970: Table 2) reports 36 terrace sites that received water from permanent water sources. The evidence presented by Hommon suggests that 29 irrigation systems with a combined 6.38 ha were present in the upper valley.⁴ These were fairly small (average 15.1 terraces or 0.22 ha), although three were larger than one hectare (maximum 3.32 ha). Most irrigation was located on the alluvial benches immediately adjacent to the main stream and probably received water through short ditches tapping the main stream. One permanent tributary and several springs appear to have provided water for about 29% of the irrigated land area.

Evaluation of Variability in Secondary Zones. Among the *ahupua'a* classified as secondary zones of irrigated agriculture, the lower valley with its floodplain contrasted with the narrow interior valley with limited alluvium. In Halawa and Kahana, extensive alluvial deposits existed near the sea, and these

were developed in several fairly large systems. Although the scale of these is comparable to that of those in major zones, the extent of irrigation was confined to an isolated valley. In Makaha, because of limited water and/or because of limited suitable soils, which could have been irrigated without long ditches, relatively little irrigation was in the lower valley (R. Green 1980).

The narrow interior valleys provided multiple opportunities to develop a scattering of small-scale systems along the main streams and their tributaries. The estimated areas provided by these multiple interior systems were 3.0 ha for Halawa, 1.0 ha for Kahana, and 6.4 ha for Makaha. It would appear that the development of irrigation in the interior is related in part to difficulties of using irrigation in the lower valleys. Makaha, with its extensive interior development, is clearly the valley with the most limited potential for development in the coastal segments. There was also a noticeable difference in water sources used in the three *ahupua'a* studied. In the wettest, Kahana, the predominance of interior systems used water from the many permanent side streams in the valley. In contrast, in the relatively dry Makaha with few permanent side streams, interior systems had to depend on water from the main stream or springs.

As discussed for the major zones of irrigated agriculture, the interior-coastal contrast continues to be significant for the scale of irrigation used, although considerable variability always existed from one valley to the next. Apparently the use of large coastal systems was limited by water availability and suitable alluvium, but where it was feasible to develop these systems, they dominated the total area used for irrigated farming. The existence of multiple alternative or additional small-scale systems was, however, an important aspect of the subsistence base, and provided different opportunities for farmers, some quite removed from direct chiefly intervention.

Zones of Scattered Irrigated Agriculture

Scattered irrigated agriculture was found in a variety of geographic contexts where irrigation technology is feasible but the extent of development is severely limited by the availability of water or alluvial soil (Fig. 5.1). Four such situations are described below. First, in leeward regions, valley catchments are often small and do not penetrate inland to areas of high rainfall. In such situations, streams are often impermanent and water availability would have restricted the development of major irrigation complexes. Instead, small systems were placed wherever adequate permanent water sources from small streams or springs were available. Examples include Mana (Kaua'i), the extreme western, eastern, and northern points of O'ahu, the southeastern coast

of Moloka'i, and the island of Lana'i. Second, in windward regions, severe wave action may cause the development of massive sea cliffs and restrict the development of coastal alluvial deposits. Here, where valleys are often narrow ravines opening directly onto the sea, small irrigation systems were developed where alluvial pockets existed near permanent water sources. Two examples are the multiple small irrigation systems servicing the steeply terraced agricultural sites in the valleys of Moloka'i's northeastern coast and small irrigation systems farming the narrow and isolated strips of alluvial soil at the base of the massive sea cliffs on the Kohala-Hamakua coast of Hawai'i. Third, in geologically immature regions, valleys are typically only narrow parallel gulches with restricted alluvial deposits. Irrigation, as a consequence, was small and was distributed wherever small alluvial deposits were found associated with permanent streams. Examples include the many gulches on the northern coasts of Hawai'i and the northeastern and southeastern coasts of Maui. Fourth, as described earlier, the interior valleys of major and secondary zones contained multiple opportunities to develop scattered small-scale irrigation systems. Additionally, permanent interior streams, isolated from coastal zones, were sometimes used for relatively small-scale systems as seen in the narrow interior canyons of O'ahu's central saddle and several upland streams on Hawai'i.

The only detailed archaeological study of irrigation in these marginal conditions is the research for the windward Kohala-Hamakua coast of Hawai'i (Tuggle and Tomonari-Tuggle 1980). Geologically this region is the oldest area on the island and it is dissected by steep and narrow valleys that usually open directly onto the sea. Typically (for example, in Honokane nui, Honokane iki, and inland Pololu) irrigation systems were constructed on the small and fragmented alluvial benches that border the valley streams. In other locations, irrigation systems were constructed in the bed of small streams (Awini and Honopue) and on small coastal land shelves (Apua) found at the base of waterfalls. The size of these irrigation systems is usually small, restricted by the area of available alluvial soil on a bench. Tuggle and Tomonari-Tuggle (1980) record 23 irrigated terrace sites and another 15 possible irrigated terrace sites. In the preliminary report, size data for these irrigation systems are not recorded in detail but the number of terraces are usually estimated. Of the definite and possible irrigated sites, only eight (21%) contained 40 or more terraces. The largest site, located on an alluvial bench near the sea in Honokane nui, had historically 5.5 ha of irrigated land surface and about 145 terraces were located archaeologically. In most other situations, the irrigation appears to have been quite small (usually less than 1 ha).

The water sources used in the Kohala-Hamakua region included the main stream, tributaries, springs, and waterfalls. Apparently, because of difficulties

in obtaining water for the small benches that were often several meters above the stream, small water sources located near to the planting area were preferred. The extensive use of waterfalls is particularly interesting and Tuggle and Tomonari-Tuggle (1980) record the use of bamboo to tap one such source. It seems that water was limited or at least difficult to conduct to suitable land surfaces (D. Tuggle, personal communication). For example, in Pololu there was a fairly extensive coastal floodplain but this section was used primarily for dryland farming because of problems with water availability.

The research from the Kohala–Hamakua coast and evidence of scattered irrigation elsewhere show how the traditional Hawaiian farmer made use of dispersed areas where suitable but restricted soil–water conditions were found. Even very small systems, often with fewer than six terraces, were constructed where alluvial pockets were associated with springs, waterfalls, and other sources. The extent to which small irrigation systems were used, often considerable distances from the sea in narrow interior valleys, indicates how important irrigation was in the Hawaiian subsistence economy. Irrigation was absent only where no permanent water sources were available. The research at Lapakahi, Hawai'i (Newman 1970; Rosendahl 1971) provides an example of an *ahupua'a* in a geologically immature region where agriculture depended entirely on rainfall and temporary runoff because water sources for permanent irrigation were unavailable.

Summary Comments on the Distribution of Traditional Irrigation

What I have tried to describe is how the distribution of irrigation and the extent of its development were constrained by available environmental conditions, including geological age, the extent of alluvial plains, and the amount and seasonality of available water. The irrigation was a cultural artifact that transformed the productivity of the Hawaiian landscape, but its form and construction were restricted by the larger geological and hydrologic processes. We can thus observe a dynamic relationship between the opportunities of nature, the objectives of humans, and the economic formations of the Hawaiian society.

The three-part classification of irrigation zones used here is a heuristic device to illustrate the continuum for the local importance and extent of irrigated taro agriculture in the Hawaiian Islands. Major zones of irrigated agriculture were located where both soil and water conditions were ideally suited for the development of extensive irrigation. These conditions existed (1) where extensive alluvial plains occur, usually associated with mature valleys

protected from severe wave action; and (2) where adequate water sources occur in windward zones of high rainfall or in leeward areas with valleys penetrating to high rainfall zones.

Secondary zones and zones of scattered irrigated agriculture represent conditions increasingly unfavorable to extensive development of irrigation. Limits to development appear to have been set by the availability of alluvial soils and adequate water sources. These conditions prevail (1) where the normal coastal deposits of alluvial soils have been eroded by wave action; (2) where valleys with small catchments are found in zones of restricted rainfall; or (3) in geologically less mature areas where valleys are typically narrow gulches with limited catchments and alluvial deposits. It is important to recognize that more extensive development of irrigation was frequently possible given traditional Hawaiian technology but that it required costly capital improvements such as long initial ditches and high terracing (R. Green 1980).

The continuum of irrigation development, as described by the three-part classification, represents a range in agricultural potential constrained by environmental factors. It is interesting to note that the distribution of major zones and secondary zones was quite similar, but that secondary zones were located in areas where soil or water conditions began to limit agricultural development. Scattered zones were located in areas marginal to irrigation agriculture and so an opportunistic pattern of using localized and limited situations suited for irrigation is noted. In terms of overall pattern, traditional irrigation was clearly most extensively developed on geologically old, high (greater than 1000 m) islands (e.g., Kaua'i, O'ahu, and western Maui). Correspondingly, irrigation was much less important on geologically young islands (Hawai'i and eastern Maui) and lower (less than 1000 m) islands (Moloka'i and Lana'i). Within an island, irrigation was well distributed and no windward–leeward contrast was evidenced. Rather there appear to have been core areas of major development bounded by peripheral areas where suboptimal conditions restricted development. Thus, within a district of a geologically old, high island, *ahupua'a* existed often representing the full range in developmental potential. This would tend to have created districts of comparable productive capacities, despite marked variability for the communities within a district (Earle 1978).

Physical Dimensions and Construction Techniques of Traditional Hawaiian Irrigation Systems

As noted earlier, the impact of irrigation on society has been investigated by anthropologists for more than twenty-five years and a major debate was centered on the managerial theory of irrigation, which sees the technical characteristics of irrigation requiring centralized direction (Wittfogel 1957). The managerial requirements of irrigation most frequently referred to include (1) recruitment and direction of labor crews used for construction and maintenance, (2) the allocation of water and settlement of disputes over water rights, and (3) defense of irrigation during warfare (see Earle 1978, for a fuller discussion of these managerial requirements). In brief, the scale of irrigation is seen as causally related to managerial control; the larger and more complex the systems, the greater is the need for management and corresponding centralized political organization. In the aboriginal Hawaiian Islands, the *konohiki*, land stewards for the chiefly elite proprietary, were responsible for the direction of activities involved with irrigation. Whether or not the development of land managers was required by the irrigation technology is, however, open to considerable question.

In this section, I summarize the data on the physical dimensions and construction techniques of traditional Hawaiian irrigation as available in published archaeological reports. This summary provides an understanding of the size and thus labor and its scheduling that would have been required in the construction of the facilities. Information on the overall size of the irrigation systems and on the particular technical characteristics of dams, ditches, and pondfields is presented. The reasons for synthesizing this information are to provide as comprehensive a description of traditional Hawaiian irrigation technology as possible and to evaluate the managerial requirements of these resulting from overall scale and technical complexity.

Size of Hawaiian Irrigation Systems

The average size of traditional Hawaiian irrigation systems was quite small (see Table 1 in original article, Earle 1980) although there was considerable variability reflecting the contrasting interior-coastal pattern described earlier. The largest systems were located consistently in the broad alluvial areas near the sea, and these large ones often dominated the total area in wet taro production. Many smaller ones in the interior valleys contained a smaller but still important area of taro production.

The historic data from the Halelea District indicate an approximate ratio of 1 farmer to 0.47 ha of land on an irrigation system. Using this calculation, systems with less than a half hectare would probably have been operated by a single farmer, and this would include virtually all interior systems. The larger

coastal systems would have involved a number of farmers, perhaps a dozen for a 5 ha system. In Halelea, an average system had 6 farmers (range 0-60), although about 48% of these serviced 3 farmers or less (Earle 1978: Table 7.3).

The data suggest that traditional Hawaiian irrigation was small scale. Virtually all irrigation systems⁵ served a single community and each community used multiple systems and water sources. This pattern of multiple systems each associated with a single community characterizes village-level irrigation for which local traditional organization suffices to manage their operation (Earle 1978:135).

Dams

The initial diversion dams are rarely preserved archaeologically because of the impermanence of their construction. In the Halelea District (Earle 1978), one archaeological example and several traditional modern examples were described. These dams were constructed by piling local river cobbles into a stone mound that lay across the stream at some natural bend or rapids. The mound was modest in size (1-2 m wide, 0.4-0.6 m high, and 6-50 m long) and was often reinforced by being constructed between *in situ* stream boulders. Such a dam does not stop stream flow but creates resistance to the flow and diverts some water into the primary ditch. Any major freshet washes out the dam, but this actually restricts damage to the rest of the irrigation complex by not diverting floodwaters into the ditches and onto the fields. When washed out, a stone dam could be rebuilt quickly with the labor from a few households (Earle 1978).

Although additional dams are not described in the published reports, the general locations of the irrigation systems indicate that comparable dams were probably used. Tuggle and Tomonari-Tuggle (1980) mention one that used bamboo to tap a waterfall source.

Ditches

Hawaiian irrigation used simple ditch networks to convey water from the initial source diversion to the taro patches. In small systems, the primary ditch often terminated at the top of a pondfield series; in larger ones, the primary ditch continued the length of the system and secondary ditches were used to service field areas (see Riley 1975: Table 27; Earle 1978).

Construction techniques for Hawaiian ditches were simple. Ditches were excavated earth channels with the dirt, which was removed during initial

construction and later clearing, being piled to either side (Riley 1975: Fig. 36). Especially near the intake of a primary ditch, the earthen sides of the ditch were often reinforced with stone linings (Riley 1975: Figs. 35 and 46; D. Tuggle, personal communication; Earle 1978: 84, 98, 100; Bennett 1931: 130, 145). Where the primary ditch was laid out along the contour of a slope (Earle 1978; Bennett 1931: 145), the lower bank was typically reinforced with a stone retaining wall. On Kaua'i, Bennett (1931) records several examples of a large stone wall being used to convey a primary ditch around a cliff face. These archaeological examples include the famous "Menehune ditch" with its wall of cut stone blocks running about 60 m along a cliff face and perhaps 7-8 m tall (Bennett 1931: 105-107; Handy 1940: 63) and two additional sites with rough fieldstone walls 1 to 6 m high (Bennett 1931: 110, 148).

The cross section of Hawaiian primary ditches varied from 0.5-2.0 m deep by 1-3.1 m wide (Riley 1975: 91; Earle 1978: Fig. 5.3) with the largest cross sections occurring near the ditch's intake and generally decreasing in size through the system. Special features associated with these ditches are rare, although three examples of stone culverts conveying water under freestanding walls are described (Riley 1975: 103-104; Earle 1978: 87, 88).

The length of primary irrigation ditches varied considerably. Some received water almost directly from their spring sources, while the large coastal systems could use primary ditches over 3 km long. Although interior systems typically used short ditches (less than 50 m long initially), a significant amount of the irrigated land was serviced by ditches over 1 km long (5 systems, Halelea; 2 systems, Kahana; 1 system, Halawa). Table 2 in the original article (Earle 1980) lists the average and maximum length of primary ditches, the initial segment from intake to the first agricultural fields, where data were available. The initial segment was usually short, even for large coastal systems: The first taro patches were found within 100 m of the intake for all the Halawan systems (Kirch and Kelly 1975: Fig. 3), and 83.3% of the Halelean systems had first taro patches within 250 m of the intake (Earle 1978: Table 7.3). The lack of irrigation in coastal Makaha may reflect an avoidance of areas that require long initial segments (R. Green 1980).

The percent slope for Hawaiian irrigation ditches was most gradual (0.6-0.9%) where the ditch attempted to maintain an approximate contour line along the lower slope of a ridge, but the slope was steeper (1.6-6.9%) where the ditch ran approximately perpendicular to the dominant contours of a site (Earle 1978; Riley 1975: 91). In comparison to both modern taro and historic rice farming in the same area, these slopes were relatively steep and resulted, at least in part, in the underutilization of prime agricultural land (see Earle 1978: 106).

Pondfield Terraces

Taro pondfields consisted of roughly rectangular water-filled basins surrounded by an earthen bund about 1 m thick (Earle 1978: Table 7.1). Pondfields were constructed on alluvial floodplains and on adjacent taluvial soils. Site slope was usually less than 15% (see Earle 1978: Table 6.1). An ideal location for pondfields was the gently sloping floodplain near the sea, where patches could be laid out as a fairly regular patchwork of fields watered by primary and secondary ditches. In steeper locations, pondfields were individual terraces often linked as stairlike terrace series along an alluvial bench (Hommon 1972: Fig. 17; Earle 1978: Fig. 6.6) or down a narrow drainage swale (Earle 1978: 85-86). Where topography is irregular, patches vary greatly in size and are irregularly shaped to take advantage of any flat surface and to minimize alterations of the natural topography (Bennett 1931: 20; Earle 1978: Fig. 6.4).

From the available evidence, the tasks involved in patch construction can be outlined. A pondfield terrace was apparently constructed by a cut-and-fill operation whereby earth was excavated from the rear slope and used to fill the front, thus creating an artificially leveled planting area (Handy 1940: 38). Technically, the most complex task was the construction of the front bund and retaining wall, which sometimes stood over a meter tall. The bund was composed of mixed fill (earth and randomly placed stones) that was packed tightly by pounding (Yen et al. 1972: 69; Kamakau 1976: 34; Earle 1978: 115). After the bund was complete, a stone veneer was added to the outside (and occasionally the inside) facing of the earth bank (Yen et al. 1972: 69; Riley 1975: Fig. 51; Tuggle and Tomonari-Tuggle 1980). Apparently this veneer was one stone thick, starting with larger stones (up to 150 cm as the longest dimension) imbedded in subsoil and then built up with progressively smaller stones to the height of the embankment. The height of this wall usually varies from 0.2 to 1.5 m and averages somewhat less than a meter for the detailed archaeological studies (Earle 1980: Table 3; also Tuggle and Tomonari-Tuggle 1980); on the Napali coast of Kaua'i, Bennett (1931: 142) records terrace walls up to 2.1 m high.

These unmortared walls were built of local fieldstones that were faced but not coursed. For added strength, most walls show a definite batter of 10-30° from the perpendicular and large *in situ* boulders were often incorporated into the wall line (Earle 1978; Tuggle and Tomonari-Tuggle 1980). The types of stones used in construction are basaltic but they vary greatly in size of longest dimension (10-150 cm) and in angularity (angular to rounded). In general, the type of stones used appears to reflect those that were available in the *immediate* vicinity and, even within a single site, the size and angularity of

wall rock vary markedly according to the material found close by (Earle 1978: 84-86, 106). In some situations, the earthen bunds were built without stone veneer, probably reflecting the absence of local stone (see Bennett 1931: 171; Riley 1975: 85; Earle 1978: 86).

Table 3 in the original article (Earle 1980) lists the average size of irrigated terraces documented for the major archaeological studies. The data from Halelea (av. 165 m²) and Makaha (av. 146 m²) probably represent best the typical terrace sizes for an *ahupua'a*. For Halawa, the high figure (av. 309 m²) reflects a likely overestimate because it is based on historic maps, which did not record all patch divisions (for one site, 43 terraces were recorded archaeologically in an area where only 23 patches were mapped historically; Riley 1975: 83); the very low patch size for Kahana (av. 84 m²) reflects the lack of pondfield measurements from the larger coastal systems.

As shown in Table 4 in the original article, a definite correlation existed between the gradient of an agricultural complex and the average size of its terrace: as slope increased, average terrace size decreased. The importance of land slope as a determinant of patch size most likely reflects the energetics of terrace construction. As slope increases, the amount of earth that must be moved to construct a patch of standard size increases (a doubling of slope doubles the volume of earth to be moved). To compensate for increasing slope, smaller and thinner terraces may be used to lessen the increase in required earth moving and associated labor costs. This decreasing patch size, however, results in a smaller percentage of land surface being available for irrigated crop production because more land is taken up by interpatch bunds. Larger patches could be constructed on these steeper slopes either by employing large work crews (Kamakau 1976: 33) or by constructing patches in stages (starting with multiple smaller patches that are later combined). Archaeological evidence for multiple stages of patch construction or rebuilding is found in Halelea (Earle 1978), Makaha (Yen et al. 1972: 75-76, Fig. 41), and Halawa (Riley 1975: 107).

Summary Comments on Scale and Complexity

Several characteristics of traditional Hawaiian irrigation suggest that centralized management would not have been required by the scale or complexity of the systems. The archaeological evidence indicates that Hawaiian irrigation was small scale and technically simple, and minimized labor requirements. These were small in size and used relatively short ditch networks typical of village-level irrigation found elsewhere. Irrigation requiring long initial ditch segments was apparently avoided. Technically, the various features of the irrigation technology show simple designs that would

not have required specialized technical knowledge or initial layout. The relatively steep grade of the traditional Hawaiian ditches indicates *no* initial design aimed at maximizing area cultivated. Available evidence indicates that Hawaiian irrigation was constructed over a period of time by the gradual extension of the ditches and cultivated area as production requirements increased. The irrigation appears to have minimized the labor required in construction by adjusting the size and arrangement of patches to the local terrain. Materials used were all locally available and were not apparently transported any significant distance.

Because they were not required by the irrigation technology, centralized managers must, therefore, have existed for a different reason. As discussed earlier, irrigation is a capital improvement used to increase agricultural production. The local land manager of the chief attempted to maximize the chief's income derived from a land unit by expanding local production, and irrigation was critical in this regard. The management of irrigation was not apparently required by its technical complexity but was an integral aspect of land tenure in which the production from irrigation was used to meet both local subsistence needs and chiefly income (Earle 1978).

The Development of Hawaiian Irrigation

Hawaiian irrigation varies in form considerably according to the topographic and hydrologic conditions of the site chosen. Variation includes overall size, type of source, length of ditch, size and arrangement of pondfields, and height of terracing. An issue that interests archaeologists is to identify how this variation may reflect the historical development of irrigation in the Hawaiian Islands. Because irrigation is the most highly developed in Polynesia, the local evolution of irrigation technology and its relationship to the evolution of complex chiefdoms are important concerns (Yen 1973). A major research question for future fieldwork should be to establish the antiquity of sites with irrigation, and to establish the historical sequence of irrigation development. This is most probably an intricate problem involving multiple factors. Because of the lack of available data on dated systems, it is not possible to present a detailed evaluation of this development, but it is permissible to suggest general models that may account for it. Two such models are described below.

The first model derives from the work of Riley (1975: Table 27) in which he recognized four types of irrigation:

1. Spreader terrace systems that use barrage dams across temporary

- stream channels to spread water to irregularly terraced fields;
2. Gravity-fed terrace systems that use a dam on a permanent tributary to divert water through a short ditch to a small set of terraces;
 3. Peripheral-ditch terrace systems that use a dam on a permanent tributary or main stream to divert water through a ditch that runs along the side of a valley and irrigates patches on the alluvial soil between the ditch and the main stream; and
 4. Multiple-ditch terrace systems that use dams on the main stream to divert water through one or more ditches to broad areas of pondfields located on the lower alluvial floodplain.

In terms of scale and technology, there is a trend in types 1 through 4 from simple to complex. This trend includes increases in overall size, flow rates of source, size of required dam, length of primary ditch, and average size of pondfields. In general, the typology recognizes an increasing alteration of natural conditions aimed at creating artificial agricultural environments. Although Riley is careful to refrain from speculation, he implies that this typological variability from simple to more complex may reflect a developmental sequence. In other words, the evolution of irrigation in the Hawaiian Islands may have progressed from the smaller, simpler forms (types 1 and 2) toward the larger, more complex forms (types 3 and 4). The sequence would, therefore, represent increasingly sophisticated technology perhaps tied to a more centralized sociopolitical organization.

The second model is derived from the work in Halelea (Earle 1978). Inherent in this alternative model is the assumption that there is actually little technical difference in the irrigation systems in the Hawaiian Islands. Basically they may be viewed as employing similar technological principles and the distinctive forms of the systems result from different requirements of specific topographic and hydrologic conditions. Rather than a sequence emphasizing technological innovation and sophistication, this model considers the development in irrigation as a gradual process of intensification and expansion. This model would predict that irrigation would initially have been constructed in areas where production would have been most efficient (producing the highest yield per unit input) and then it would have expanded into more marginal areas requiring increased labor inputs (Boserup 1965). This intensification would have been a combined result of increasing population density and increasing political demands (Earle 1978; R. Green 1980).

The probable sequence would have been first to construct irrigation on the alluvial floodplains and later to use the irregular and more steeply sloping terrain found inland. Although the irrigation might require somewhat smaller dams and shorter ditches during initial construction, it is felt that the major

labor requirements in construction would have involved the cut-and-fill needed to build the terraces and in this regard the alluvial floodplains have a distinct advantage.

In order to represent the relative efficiencies of Hawaiian irrigation, the surface area in production (m²) and the volume of earth moved during terrace construction (m³) have been calculated for three archaeological sites and two functioning systems in Halelea (Table 5.1). The ratio of surface area to fill volume is then used as a rough estimate of potential agricultural yield per unit of initial labor cost. As seen in Table 5.1, Systems 14 and 15 and site Ka-D6-11 required considerably lower average construction costs with 21.3-30.3 m² of agricultural surface being created for each cubic meter of earth moved in terrace construction. System 15 and site Ka-D6-11 (comparable to Riley's type 4) are located on alluvial islands in the Wainiha stream, and System 14 (comparable to type 3) is located on the alluvial floodplain bordering the stream. Site Ka-D5-8 (comparable to type 2) was less efficient, yielding only 5.5 m² for each cubic meter of fill. This site represents a typical small irrigation complex located on the alluvial bench of a minor independent stream. Finally, site KaD5-4 is intermediate in efficiency (15.9 m²/1 m³). This site (roughly comparable to type 4) is located on the topographically irregular alluvial fan at the mouth of the Limahuli stream, Ha'ena.

The main point is that Riley's type 2, although small and technically simple, usually required more labor in terrace construction than do the alluvial floodplain types 3 and 4. If initial construction costs were critical for deciding what areas to put into production, the floodplains would have been favored. Initially at least, the systems on the floodplains could have been quite small as indicated by the relatively short distances from stream diversion to the first patches, but these would then have been expanded gradually according to need. The use of the steeper and more irregular topographic situation inland would, from this perspective, represent a need to expand production further despite increasing costs.⁶

TABLE 5.1 Showing the relationship between land area in production to volume of earth moved in construction of five irrigation systems from Halelea, Kaua'i

Site/System	Surface Area of Terraces	Volume of Earth Moved in Construction	Ratio Area: Volume
Ka-D5-8	2,591m ²	474m ³	5.5m ² /m ³
Ka-D5-4	32,620m ²	2,044m ³	15.9m ² /m ³
Ka-D6-11	26,804m ²	960m ³	27.8m ² /m ³
System 14	8,129m ²	383m ³	21.3m ² /m ³
System 15	40,052m ²	1,370m ³	30.3m ² /m ³

There are two interesting, although preliminary, pieces of archaeological information that seem to support the second model, predicting a diachronic trend toward the use of irrigation that requires higher construction costs. In the earlier discussion of secondary zones, it was noted that interior irrigation, which requires high labor expenditures for terracing, was used most extensively in Makaha, where it was difficult to develop coastal systems. This seems to indicate that, where possible, the lower-cost coastal irrigation was preferred. Similarly, Tuggle and Tomonari-Tuggle (1980) report that extensive use of irrigation in the Kohala–Hamakua coastal region was late (post-A.D. 1600) in the prehistoric sequence. The broken topography of this region would require high capital expenditures for terrace and ditch construction and so a relatively late use of the area for irrigation would be predicted by the cost model.

Conclusions

For the Hawaiian Islands, this chapter summarizes the available archaeological data on traditional irrigation and evaluates its significance for the evolution of complex sociopolitical organization. Although irrigation was developed here to the highest extent in all Polynesia, considerable variability existed within and between individual islands in their potential for developing irrigation. Locally, irrigation varied from relatively large-scale field systems that dominated local agricultural production to small and scattered systems that were secondary to dry farming. Specific geological and climatic conditions controlled the availability of the key resources (alluvial soils and permanent water) and thus channeled the local development of irrigation. In terms of scale and complexity, Hawaiian irrigation was characteristically "village level"—relatively small size, contained within the boundaries of a local community, and using a simple technology. It seems, therefore, unlikely that centralized management above the community level would have been necessary. Rather, the existence of the land manager can be interpreted best as an aspect of land tenure in which local production was used to support an elite social group and the political activities of the chiefdom. Two models for the development of Hawaiian irrigation are presented—the first emphasizing technological change, and the second emphasizing agricultural intensification. Although present evidence is insufficient to accept or reject either model, the second articulates best with the general argument presented in the chapter. The importance of irrigation appears not to have been related to its technology but was tied to its potential for intensification, whereby expanded production was linked to

increasing population densities and sociopolitical evolution.

Some Recent Work

Since the original publication of this chapter, considerable work has been done on irrigation and the role of agricultural intensification in the emergence of complex Hawaiian chiefdoms. Various authors have considered agricultural intensification and its implications (Morrison 1994; Stone 1993, 1994). The conclusion is that intensification is a complicated process involving multiple opportunities for increased agricultural production; the choices made vary according to the specific goals of the individuals involved. Thus a farmer invests differently according to the social structure and the associated land tenure within which he participates. The goals of the peasant farmer and the landowner are quite different. In the Hawaiian case, a key factor in the process of intensification was, for example, the chiefs' need to mobilize from the commoners that surplus used to finance the chiefdoms' development and operation (Earle 1997).

Irrigation continues to be of central interest to both ethnographers (Enge and Whiteford 1989; Hunt 1988; Mitchell 1991) and archaeologists (Doolittle 1990; Fish and Fish 1992; Hopkins 1984; Kirch 1994). Research continues to focus on social labor in irrigation, suggesting that irrigation complexes were a map of and a plan for social interaction. Kirch and Sahlins (1992) document this point particularly clearly for the irrigation in Anahula valley on O'ahu.

Recent work on irrigation in the Hawaiian Islands provides important additional information about the technology and date of individual systems. Kirch (1977) summarizes our knowledge of Hawaiian irrigation. The most detailed new evidence is available for O'ahu from the major zone of Kane'ohe–Kailua in Koolau pokou (Allen 1987) and the secondary zone in Anahula valley on the northwest coast (Kirch and Sahlins 1992). These provide important new information on the size and complexity of the irrigation technology that fits well with previous work. Perhaps most important to establish the sequence of technological development and intensification, Allen (1992) has compiled a radiocarbon chronology for the history of farming in the Hawaiian Islands. Some irrigation sites dated quite early (pre-A.D. 800), suggesting that irrigation was part of the technological knowledge of the first colonists. The bulk of radiometric dates from sites with irrigated agriculture date after A.D. 1200 and appear to correspond with both population expansion and the formative process of chiefdoms. I conclude that Hawaiian chiefdoms, from quite early on, depended on staple finance with surplus from the irrigation and other

intensified agriculture.

Considerations of agricultural intensification and the evolution of Hawaiian chiefdoms include Allen (1991), Earle (1997, 1998), and Kirch (1977, 1994). Using the radiocarbon sequence, Allen (1991) sees coordinated construction of irrigation after A.D. 1400 that probably involved the intervention of supralocal chiefly authority to maximize surplus production. I (Earle 1998) argue that in this later period these irrigation systems were built with social labor centrally managed by chiefs; individual farmers received subsistence plots on the irrigated fields in exchange for their corvée labor on chiefly lands and other projects. The construction of the built landscape marked the creation of new land tenure (property) relationships on which staple finance depended.

As described earlier, the Hawaiian Islands did not share equally in the lands suitable for major or even secondary irrigation districts. So how did this pattern of differential development of irrigation affect the evolution of chiefdoms? Kirch (1994) develops an indigenous argument that turns Boserup's (1965) argument on its head. He argues that the developments of the most complex chiefdoms in Polynesia generally, and on the Hawaiian Islands specifically, were associated not with intensive irrigation farming but with dryland agriculture for which intensification was severely limited. Take for example, the island of Hawai'i, where the largest chiefdoms in Polynesia developed. The early chiefdoms here were in fact based on the intensification of irrigation farming on the northern coast. Subsequently, however, the islandwide massive chiefdoms were fashioned by conquest warfare. These extensive chiefdoms then depended heavily on the intensified dryland farms along the island's west coast where no irrigation existed. Kirch argues that the limits to intensification inherent with dryland farming resulted in the move toward expansionist chiefdoms based on warfare (not maximized irrigation agriculture). The distinction that he draws between "the wet and the dry" may relate to the distinction between corporate and network strategies for political development ([Chapter 1](#)). Corporate strategies, based on the construction of highly intensive irrigation agriculture owned by ruling chiefs, are more local and conservative. In contrast, network strategies, built for example on military expansion, because of the limits to local intensification, maybe more dynamic and expansionistic. The important point is that underlying environmental conditions and their realization through intensification may channel the trajectories of political development quite differently. These political differences apparently rested on differences in the subsistence economy and linkage to types of finance.

In [Chapter 6](#) we consider the role of specialization in the creation of wealth among the Hawaiian chiefdoms and the Inka. Both the Hawaiian chiefdoms and the Inka were based primarily on corporate strategies and staple finance.

The role of wealth, especially as related to dynamic military expansion, needs to be considered as well. Did the broader polities of the Hawaiians and the Inka require the shifting strategies to wealth finance as a means to support the military expansions and retain control of the widespread conquests?

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Specialization and the Production of Wealth

Hawaiian Chiefdoms and the Inka Empire

Specialization involves a division of labor—a specialist making a product for trade, as others make different goods also for trade. Specialization thus contrasts with the Domestic Mode of Production in which families make what they use themselves. Any segment of an economy can be classified along a continuum from specialized (producing for others) to generalized (producing only for one's own), and specialization can be divided into a number of different types (Costin 1991). Specialization implies exchange and the rights of "alienation," although these rights are often constrained by social rules. Alienation means simply that the individual owner can trade the objects to another. This chapter considers the reasons why specialization develops and is linked to contrasting rights of alienation. Specialization is fundamental to many theories in economics and economic anthropology.

Specialization characterizes all economies, and it may be one of the most human of traits (Johnson and Earle 2000). Within the Domestic Mode of Production, divisions of labor by age and sex require continual and sustaining reciprocity between family members. Thus in a foraging society, women may gather foods and tend children, as men hunt and build the huts. Although most tasks can be done by most people, they seldom are. Tasks are thought of as appropriately male or female, young or old, according to the cultural rules of individual societies. Such elemental specialization and mutual support create the family as a domestic economy (Sahlins 1972). These small social groups may be prefigured by other primates, but the domestic economy is fundamentally unlike other nonhuman ecologies. No similar continuous interchange of foods and products takes place within nonhuman groups.

All human economies involve specialized production and exchange, but only to some degree (Clark and Perry 1990). Certain societies are comparatively unspecialized, whereas others are more highly specialized. People choose to produce certain goods and exchange with others because it makes sense for them to do so. Specialists include men and women, both commoners and

chiefs; they are social agents (Costin and Wright 1998). To understand craft specialization, we must understand the logic and social contexts of craft production. Who are specialists, how do they control the products of their labor, and who, if anyone, controls them?

A basic challenge of economic anthropology is to document and explain variation in specialization and the resulting webs of economic dependency. Although many assume that specialization is inherently desirable (Smith 1937 [1776]), anthropological evidence of its frequency and distribution demonstrates that it is not necessarily so. Regardless of potential systematic advantages (as described later), specialization is often not seen as advantageous to individuals and families. Across many human societies, the insecurities inherent in exchange push the family toward being as self-sufficient as possible. Simply stated, to the degree that a family is self-sufficient, it need not rely extensively on others (who are more distant and less committed) for its survival. The householding unit, as described by Halperin (1994) for Appalachia, is a reasonable solution to the complexities and uncertainties even in a modern rural world. Despite the problems of household security, specialization eventually dominates human economies. Why?

Specialization is not a single phenomenon with a single cause, but incorporates various economic relationships (Costin 1991). To illustrate one significant dimension of variation, specialization can be described heuristically by two types of specialists: independent and attached (Brumfiel and Earle 1987; Clark and Perry 1990; Earle 1981).

Independent specialists produce goods and services for an unspecified demand group, meaning simply anyone who wants the product and has access to it through exchange. Production by such specialists is motivated by two factors that increase the potential demand in the marketplace for their products. The first is efficiency in production, because efficiency lowers the cost to the producer and the price of a commodity in exchange, and thus increases the potential demand for that item. Logically, independent specialists should seek to lower production costs and thus increase their access to markets. The second factor is standardization, because it facilitates the ability to recognize the value of an item in exchange. Standardization is a characteristic of large-scale production by independent specialists (Rice 1981) because it provides a guarantee of worth and thus lowers transaction costs. At the same time standardization may lower production cost as tasks become increasingly routine. Examples of independent specialists include a village potter or an herb specialist. Importantly, independent specialists and those receiving their goods through exchange have rights of alienation—initial ownership, based on manufacture, can be transferable by exchange. Therefore, they are independent agents.

Attached specialists produce goods or provide special services to a patron, typically an elite person like a chief or lord, or to an institution like a church or military organization. The building of a patronized relationship is effected primarily by a patron's concerns for secure and reliable access. The security gained by the patron translates into control over the distribution of the goods and services that the specialist makes. Typically products are weapons and prestige objects. Efficiency and standardization are not major concerns for attached specialists; rather the objects tend to be highly elaborated and individualized, so that only a few craftsmen can produce them and fakes are easily exposed. These objects are not openly exchanged. They are inalienable objects gifted strategically within spheres of exchange (Chapter 2; Weiner 1992). Examples of attached specialists include bronze metallurgists, weavers, or priests. The social status of an attached specialist can vary greatly. Some, the wives or kin of chiefs, are active agents working to further their own ambitions; others can be slaves working to satisfy their master's desires.

For a full consideration of specialization, I refer the reader to various refinements and debates on the subject (Gero 1983; Clark and Perry 1990; Costin 1991; Clark 1995; Costin and Wright 1998). Like many terms, attached specialist and independent specialist do not conceptualize natural categories, rather they recognize important dimensions of variability in complex human activities. Examples of other dimensions of variability include the percentage of time that a producer is involved in a task (part-time vs. full-time specialization) and the status relationships between artisans, their markets, and their patrons.

Causes of Economic Specialization

To understand specialization and its role in the emergence of complex societies, we must clarify the different reasons that specialization and exchange expand and how two economic factors articulate with social complexity. The question as considered here, and in Chapters 4, 10, and 12, which deal with exchange, is how to explain variation in specialization cross-culturally as causally linked to the emergence of political complexity. As seen in the three cases discussed in this book, specialization and exchange are *not* linked to complexity in any straightforward or simple way. No direct relationship exists between the amount of specialization and the degree of complexity, which to many is counterintuitive. In *Specialization, Exchange, and Complex Societies*, Brumfiel and Earle (1987) discuss three models of economic development and political evolution: the commercial development model, the adaptationist

model, and the political model.

The Commercial Development Model

Theories of classical political economy envision an inherent long-term economic growth as humans progressively developed better technologies. The better technologies were, according to these theories, linked to the development of specialization and interdependent exchange relationships. Adam Smith began his *Wealth of Nations*: "The greatest improvement in the productive powers of labour, and the greater part of the skill, dexterity, and judgment with which it is anywhere directed, or applied, seems to have been the effect of the division of labor" (1937 [1776]: 1). He described how the division of labor for manufacturing steel pins is necessary for efficiency and low cost. The wealth of nations, by extension, depends on expanding specialization and self-regulating markets. Economic specialization increases efficiency, lowers cost, and produces the broadest availability of desired goods. Specialists can experiment and devise the most efficient means of production that lower the costs for all. Early Marxists followed this evolutionary model, emphasizing how developing capital technology created a more productive economy but one with new divisions of labor and "relations of production" that cause extreme social stratification and political domination (Engels 1972 [1884]).

On the basis of Adam Smith and subsequent political economy models, many anthropologists have assumed a long-term evolutionary trajectory in which more complex societies emerged as specialized production increased efficiency, productivity, and surplus production (Childe 1936; reference in Brumfiel and Earle 1987). Clæssén (1984), for example, describes market exchange (and by extension specialization of production) as a defining characteristic of states. It has often been thought that human evolution involved a long-term development of technology and productivity that was linked to emergent markets and the growth of social complexity. Essentially specialization was thought to create a highly productive economy and the potential for surplus that could support the emergent institutions of civilized societies.

These models, however, developed to explain rapidly expanding capital technologies and world systems of exchange in the eighteenth and nineteenth centuries, have proven of limited use to explain the diverse paths of social evolution that are now being documented for noncapitalist economies and societies. The commonsense economic theory from Western economics predicts that independent specialization should increase through time as

individual producers seek out means to increase efficiency and market access, and as the increasingly specialized and integrated market economies generate expanding surpluses to fuel social elaboration.

The commercial development model fails to explain many cases, such as the remarkable Hawaiian and Inka cases. Here complex political systems developed without large-scale independent specialization as linked to market exchange. Therefore, specialization on any large scale is not necessary to build complex societies. What we can gain from the logic of the classical economists, however, is a method to predict when independent specialization develops. In the Hawaiian and Andean cases, specialization was limited and unnecessary for the development of these societies, because technologies with economies of scale were not part of the political economies.

Perhaps the most influential aspect of the commercial development model is to recognize that different technologies have predictable consequences for the division of labor. For example, the potential economies of scale and special skills levels of certain industries, such as the pyrotechnic industries in metallurgy and ceramics, may be suited to some level of specialization. For example, where ceramics and metals are produced, some specialization usually exists, and conversely, where they are absent, specialization and exchange may be little elaborated.

For the Hawaiian Islands, independent specialization was limited because, with the one exception of stone adzes, there were few economic advantages to specialization. Here and elsewhere in Polynesia, the manufacture of ceramics was abandoned during colonization, and metallurgy was never developed. In general, without the industries that have distinct economies of scale, there were thus few independent specialists. For the adzes, although specialists existed, the numbers were not great, and their production and distribution were not linked to the overarching governmental structure.

As mentioned, the best archaeological evidence for specialists in Hawaii was the production and exchange of stone adzes. The adzes were formal tools (tools with specific uses that tend to be curated for long periods of time because of their value; Andrefsky 1994). Formal tools also tend to be made by specialists when they require large investments of labor in their manufacture and special materials to make them more durable (Steinberg 1997). The Hawaiian adzes were ground tools that were used in woodworking; they apparently required considerable work to find the raw materials of the best quality and durability and to craft them properly. Debris from some of the thirteen basalt quarries on the Hawaiian Islands documents specialization. Near the summit of the Mauna Kea volcano on the island of Hawai'i is a large adze quarry with working debris spread over nearly 20 km² (McCoy 1977; Cleghorn 1986). Along the main escarpment and on the outwash plains were many piles of flaking debris,

rockshelters, and small shrines. These sites were special-purpose knapping stations with associated living and ritual places for the adze makers. Based on an analysis of the lithic debris from several locations, the knappers' skill apparently varied considerably (Cleghorn 1986). The most skilled crafters had apparently worked on the escarpment of Mauna Kea, where the best basalt materials could be obtained, and less skilled crafters worked below with the less prized basalt available on the outwash plains.

The extent of chiefly control of production for stone adzes, however, was limited. As with the production of flint daggers in Denmark ([Chapters 12 and 14](#)), although fine Hawaiian craftsmen produced the best adzes, they were probably independent craftsmen. Many alternative sources for the basalt and few economies of scale would have created an open market for the products of independent producers. In exchange, the better-quality adzes would have been more valuable, and those who built the finest objects such as canoes, weapons, surfboards, sacred idols, and ritual objects would probably have searched out these better tools. But, since alternative, lower-quality products were available, central control of adze manufacture and distribution would have been difficult to maintain. Lass (1994) documents how the many sources of basalt suitable for the adzes were used through the sequence. Through time, if control became exercised by chiefs, we might expect that the best and most easily controlled sources, such as the Mauna Kea escarpment, would come to dominate the stone assemblage, but Lass shows that no such trend exists. Although exchange in stone adzes and basaltic glass was practiced, it did not involve chiefs, except perhaps secondarily to obtain the best working tools for their attached specialists.

For the Andes, the amount of independent specialization was more extensive than in the Hawaiian Islands, but the lack of direct political impact is notable. Andean pyrotechnic industries involved both extensive ceramic and metal crafts, some beautifully crafted. These technologies create some economies of scale that would have encouraged exchange, but far-ranging markets did not develop, and the extent of exchange practiced was surprisingly unrelated to levels of political integration.

Independent specialization existed in the Andes especially for ceramics, whose makers often clustered into communities that produced pottery for local exchange (Costin 2001). The archaeological distribution of production debris is used to document community specialization in ceramics, lithics, and cloth. As seen by the contrast between Wanka II (pre-Inka) and Wanka III (under Inka domination) societies, the rapid expansion of the Inka empire and its imposition of regional peace were not linked to expanding specialization or exchange ([Chapter 10](#)).

For the manufacture of ceramics, certain Wanka households in certain

villages were part-time potters (Costin 1986, 2001). Ceramic manufacture has an economy of scale such that the average cost of producing a pot declines as the number of pots made increases. As a synthetic material, ceramic manufacture requires many controlled steps to transform the earthly clay into the finished pot. The skill level to produce successful pots is fairly high, and improves with routine practice (Hagstrum 1989). Counter to goals of household self-sufficiency, individual families rarely produce their own pottery, because it is simply uneconomical to do so. In the Andes today, potters concentrate in a few villages perhaps because of traditional knowledge handed down from potter to potter and because of the advantages of cooperative firing, clay mining, and other tasks (Hagstrum 1989). The potting villages are located near good clay sources, and often in areas that are agriculturally poorer so that specialization is a means to provide extra income (Arnold 1975).

In the Mantaro Valley, the Upper Mantaro Archaeological Research Project (UMARP) was able to identify archaeologically independent ceramic specialization by the concentration of badly misfired sherds (Costin 1986, 2001). Excessive heat in firing will vitrify the ceramic body, causing the vessels to slump and bubbles to form in their clay body. These misfired pots probably had little value in exchange, and today they are used by potters to protect pots during firing. The waster index is the ratio of misfired sherds (wasters) to nonwaster sherds; the wasters document pottery production, and the normal sherds (resulting from breakage) document everyday consumption (Costin 1991). Because wasters are rare, the ratio is multiplied times 100 to make the numbers easier to visualize. The concentration of wasters is then used to identify production locales (Table 6.1). The waster index was highly variable from one household to the next (Costin 1991: Fig. 1.5), and the producing households (with high indices) were concentrated at a few settlements. For Wanka II,

TABLE 6.1 Contrasting waster indices for Wanka II and Wanka III settlements excavated by UMARP (Costin 1986)

Sites	Household	Waster Index	Wasters/Sherds
Wanka II		0.26	33/12,588
Umpamalca (J41)			
	41=7	1.14	17/1,489
	41=4	0.50	5/996
	41=6	0.24	4/1,643
	41=8	0.06	1/1,685
	41=1	0.05	2/3,987
	41=5	0	0/451
Hatunmarca (J2/II)		0.16	35/21,359

	2=4	0.21	7/3,381
	2=5/ii	0.19	4/2,093
	2=3/ii	0.16	12/7,720
Tunanmarca (J7)		0.07	30/45,728
	7=6	0.25	4/1,618
	7=8	0.18	2/1,115
	7=7	0.09	5/5,185
	7=2	0.06	15/25,302
	7=3	0.05	4/7,494
	7=4	0	0/1,062
	7=5	0	0/942
	7=9	0	0/1,213
Wanka III Marca (J54)		1.04	251/24,067
	54=7	2.30	37/1,610
	54=10	1.22	43/3,521
	54=4	0.76	21/2,767
	54=9	0.68	24/3,555
	54=2	0.51	22/4,267
Huancas de la Cruz (J59)		0.22	4/1,810
	59=1	0.07	1/1,466
Hatunmarca (J2/III)		0.09	29/31,045
	2=2/iii	0.17	3/1,761
	2= 1/iii	0.09	5/5,444
	2=5/iii	0.17	12/7,238
	2=3/iii	0.06	6/9,753
	2=6/iii	0	0/614
Chucchus (J74)			0/868
	74=1	0	0/334
	74=2	0	0/189

Umpamalca had an overall waster index of 0.26, and three (of six) households had indices above 0.20. In contrast, Tunanmarca had an overall waster index of only 0.07 and one (of eight) household had an index above 0.20. For Wanka III, Marca had an overall waster index of 1.04, and all (of five) households had indices above 0.20. In contrast, Hatunmarca had an overall waster index of only 0.09 and none (of five) had an index above 0.20. Some villages were producers and other villages were consumers of domestic pottery.

A problem with the use of wasters as an indicator of production is that different ceramic wares (different clays and tempers) vary in their likelihood of

wasting during manufacture. For Wanka II, production of cooking vessels, which rarely waste because they are made to withstand heat shock, was documented at Tunanmarca by a large ceramic dump distinctive from normal household trash (Costin 1986: 188-194). In one small trench, we recovered 16,000 sherds and very little else that would be expected in trash; the density of ceramic material recovered was over 40 times greater than typical for the trash deposits excavated by UMARP (68.3 kg per m³ vs. 1.6 kg per m³ in normal deposits). Furthermore, none of the sherds from that dump showed evidence of encrusted food remains, suggesting that the ceramics were never used for cooking. They were manufacturing debris, pieces broken in firing. Within the chiefdom of Tunanmarca, one settlement (Umpamalca) was making the decorated storage and serving containers, while another (Tunanmarca) was making cooking vessels.

For the manufacture of lithics, relatively little specialization and exchange have been documented for the Mantaro, because alternative stone sources were readily available and because knapping required less overall skill in comparison to ceramic production (Russell 1988). Where source materials were generally available, as in the case of the stone hoes, even formal tools were made opportunistically by members of each community who could find the cobbles for hoes in nearby streambeds and glacial gravel deposits. The fairly simple knapping required to produce hoes could easily have been mastered by most farmers.

Independent part-time specialists did, however, manufacture low volumes of prismatic chert blades. These blades were fairly standardized, long stone flakes that served as blanks to make various tools (knives, drills, burins, and sickles) (Russell 1988). Blades were made in three steps. First, at the quarry, after chert blocks were tested for quality, knappers prepared the macrocores from which blades were to be struck. Cores were shaped by removing the outer stone cortex to form distinctive parallel flake-scar ridges that would guide the eventual removal of blades. Second, at the settlements where craftsmen lived, the prismatic blades were struck from the macrocores by a hammer stone. This process was repetitive and standardized, producing many blades of similar overall configuration. Substandard blades, not suitable for exchange, were concentrated here. Third, at the farmers' compounds, the blades were flaked to fashion the particular tools desired.

Part-time specialized production of prismatic blades has been described around the world, including Mesoamerica (Santley 1984) and the Aegean (Torrence 1986), and it seems likely that there is a significant economy of scale in their manufacture. As the numbers of blades produced by a single knapper increases, the efficiency of production (time to produce an individual blade, the rates of broken and substandard blades, and the numbers of blades produced

per macrocore) apparently increases as well. The relatively high skill level required to strike the prismatic chert blades may have encouraged the development of independent specialists.

During both Wanka II and III, these blades were used fairly commonly as sickles. When used as sickles, the blades show a characteristic silica gloss derived from cutting of grasses as used for thatch, fodder, and fuel (Russell 1988: 241). Prismatic blades make up 8% (sickles, 3.24%) of the total lithic assemblage, not changing significantly between the two periods (Russell 1988). UMARP has documented blade manufacture by the distribution of distinctive blade cores and by the blade production index (blade waste/used blades) (Russell 1988). During Wanka II, blade manufacture was concentrated at Umpamalca, the settlement closest to the Pomacancha source for red chert (see discussion in next section). Here blade cores were found in five of the six excavated patio groups, both elite and commoners, whereas at the ten excavated patios from other settlements only one contained a single blade core. Households at Umpamalca had an index of 2.26 pieces of blade waste to each used blade; in contrast, households at Tunanmarca had an index of only 0.50 blade waste pieces to each used blade. In Wanka III, after Umpamalca was abandoned, households at Hatunmarca appear to have taken over blade manufacture; the blade production index for Hatunmarca III is 2.14; all other contemporaneous settlements have indices below 1.0. What appears to be documented is a fairly stable system of low-level independent specialization for blade manufacture for both periods.

The lesson seems clear. For the Hawaiian Islands and the Andes, independent craft specialization remained quite limited to serve the limited trade that took place ([Chapters 4 and 10](#)). Specialization was found only when economies of scale existed in specific crafts, as for ceramics and lithic blades. An unexpected finding was that the limited craft specialization found was unaffected by dramatic changes in the overarching political systems. Although the Hawaiian chiefdoms developed to become the most complex polities in Pacific prehistory, little independent specialization arose. And, although the Inka empire conquered the Mantaro Wanka, established a regional peace there, and restructured its political economy to produce an agricultural surplus in staple goods ([Chapter 8](#)), the amount of independent specialization in everyday objects changed little, if any, in the Mantaro. Prior to the development of large-scale integrating markets, independent craft specialization depends on the specific industries used, and such specialization is independent of central management or political integration.

The commercial development model has been elaborated in world systems theory (Wallerstein 1974) and has been used to understand how the expanding mercantile and capitalist economy of the West affected other societies

worldwide (Wolf 1982). How extensive and under what circumstances such long-distance economic relationships have been transformative are debated (Rowlands et al. 1987; Stein 1999). In the modern age, commercial exchange and its sectoral division of labor have stimulated massive development and underdevelopment, and elements of these long-distance relationships can be incorporated into our models (Blanton et al. 1996). However, I want to emphasize that the world systems model is not relevant in a significant way to the evolution of many complex societies, the Inka empire and the Hawaiian complex chiefdoms included. The commercial model is, from the cases analyzed in this chapter, too restricted by conditions unique to modern capitalism to apply to many human economies (Brumfiel and Earle 1987). For an example of how these long-distance exchange relationships can be transformative, see the dramatic changes in the Danish Bronze Age, when the region became incorporated within the prestige-goods exchanges of Europe (Chapter 12).

The Adaptationalist Model

The adaptationalist model generalizes some of the assumptions of the commercial development model to make it more applicable to the range of cases routinely considered by anthropologists. During the 1950s, 1960s, and 1970s, cultural ecologists (Steward 1955a; Service 1962; Harris 1979) and new archaeologists (Binford 1968; Sanders and Price 1968; Hill 1977) articulated a broadly conceived processualist theory of cultural evolution. As envisioned by these scholars, cultural evolution was a series of local adaptations. In each environment, humans developed through time solutions to the problems of survival. These problems were not constant, but were changed by population increases, by environmental alteration, which were often induced by human activities, and by evolving economies. The solutions included new technologies and new social organizations. Leaders, for example, were seen as coming to the fore to manage social solutions to particular problems of adaptation, including the management of irrigation (Chapter 5), the management of warfare in circumscribed regions (Carneiro 1970), and the management of exchange in regions of resource diversity (Chapter 4). The causal relationships that link environmental diversity, subsistence intensification, specialization, exchange, and central management are of most interest here. In prehistory, was there a trend toward increasing specialization as populations intensified the use of local environments and exchanged specialized products regionally?

In their formative theoretical positions, Sanders (1956) and Service (1962, 1975) argued that, in areas of high environmental diversity (i.e., where

different locales are optimally suited to produce different things), local communities should gradually become more specialized. This specialization could be in primary food production or in working tools. For primary food production, communities could be expected to specialize in local opportunities; communities on the coast would be expected to specialize in fishing and those in the interior on agriculture. For working tools, regional differences in the availability of raw materials for tools would further encourage local specialization. Communities near good flint sources would manufacture stone tools, and those near good clay sources produce pottery. For formal tools, such as the Hawaiian stone adzes or Andean prismatic blades, specialization would be especially likely because particular materials would make the tools more durable or efficient than available alternatives. Local craft specialization can also compensate for locally impoverished food resources (Arnold 1975). In the adaptationalist model, the trend toward increased local community specialization can be predicted as part of the process of adaptation to diverse environments.

According to the adaptationalist argument, the development of specialization has two elements. First, it could be a creative solution to the problem of making a better life, as Adam Smith would have predicted. As people settle down and have access to smaller territories, the incentives to exchange would seem to increase (Childe 1951). Or, second, specialization could alleviate problems exacerbated by population growth or environmental degradation. As production increases to support a growing population, declining yields (increasing costs) will not be uniform in a diverse environment, and as costs climb faster in some locales than in others, local populations could be expected to specialize, producing their most efficient local strategy (Johnson and Earle 2000).

The resulting community specialization would make the local groups that had formerly been at war with each other now mutually dependent for their very livelihood. A new level of regional integration would then be seen as necessary to mediate the conflicting interests over resource access, which if unchecked would break out in conflict and threaten survival. The chief and eventually the state government are thus thought to evolve to regulate exchange and maintain regional peace.

This adaptationalist scenario is appealing, and many anthropologists initially assume that it must be true. The adaptationalist model, like the commercial development model, predicts a long-term evolutionary trend toward increased specialization, exchange, and emerging central managers. But is it supported by the evidence? Perhaps in some circumstances, but in both the Hawaiian Islands and the Andes, where all conditions for the model appear to exist, the amount of specialization and exchange do not increase through time

and do not correlate with developing complexity.

For the Hawaiian chiefdoms, although environmental diversity was high, exchange in food and tools was limited, and specialization was little developed on the Hawaiian Islands (see also [Chapter 4](#)). Communities were laid out across the environmental grain to give their members access to a range of different products from the sea, from productive lowland agriculture, and from upland forests. Most families could thus retain a largely self-sufficient householding economy. Major environmental contrasts, as between the leeward and windward sides of the islands, certainly determined differences in subsistence production, but the result was differences in population size and food eaten. Leeward communities grew sweet potato and dryland taro and celebrated their taste; correspondingly, the windward communities grew irrigated taro and ate it with enthusiasm. In food production, there was differentiation, but not specialization. Perhaps surprisingly, no community specialization in food production has been described for the complex chiefdoms of Hawaii.

As discussed, some specialization did exist for the production of working tools, especially the basalt adzes (Cleghorn et al. 1985) and perhaps also basaltic glass (Weisler 1990). Although sources of basalt and basaltic glass existed on all the major islands, they frequently did not exist within each community or district. Special materials and careful crafting were most important for the formal tools like the adzes. The durability of specific basalt for woodworking and the sharp edge of the glass for cutting would have made alternative materials less desirable, and some level of specialization appears to have emerged in their production. The evidence, as discussed earlier, however, is that the emergence of this specialization represented a very small part of the overall economy and involved no chiefly management. Again I draw special attention to the lack in Hawai'i of pyrotechnic industries (ceramics and metal) that favor specialization. Simply stated, the Hawaiian case demonstrates that social complexity and the surplus on which it was based did not depend on any specific industry, like pottery or ceramics, for which specialization was likely. The high level of political complexity developed here without functioning in the regulation of exchange among specialized communities.

For the Andean chiefdoms and the Inka empire a similar record exists. As described in [Chapter 10](#), despite extreme environmental diversity, remarkably little specialization and exchange existed in subsistence products, at least where detailed evidence is now available. In the Mantaro Valley, little exchange in food products took place prehistorically among local communities. Communities were laid out to maximize the range of foods available to a household, and the diets of local communities differed one to the next according to what resources were available within their immediate catchment

areas (Hastorf 1993). Throughout the sequence, community specialization in food production was not apparent. Productivity in subsistence farming was sufficient to support complex social institutions without specialization; adaptation in terms of food production was a household and community affair. The main exception was the creation of state farms that produced staples for imperial finance, especially the support of military operations, but these specialized operations must be understood within the political model to be discussed momentarily.

In the Andes, some part-time community specialization did produce everyday goods such as pottery, stone blades, and wool for cloth. As discussed earlier, some crafts inherently are more efficiently produced by specialists, and the Andes is no exception. Grouped into certain villages, specialists appear to have "mapped on" the localized resources needed for their crafts, meaning simply that they located close to the needed raw materials either to minimize procurement cost or to maximize ownership rights over those resources. Ethnographically, villages that specialize in pottery making are located close to the best clay sources that are mined cooperatively by the local potters (Hagstrum 1989).

For stone tools in the Mantaro, many sources are available and most stone tool production was apparently highly generalized, taking place in each household (Russell 1988). Chert, vitreous sedimentary, and fine and coarse volcanics were generally available from a variety of sources (limestone inclusions and mixed glacial and riverine cobbles) available in varying amounts within each settlement's catchment. The types of stone used typically mapped on the materials that were locally available. The exception was the red chert for blades. Near the modern village of Pomacancha, a single large (30-40 ha) quarry existed where abundant nodules of high-quality chert have eroded from a Cretaceous limestone ridge (Russell 1988: 165). Across the surface is spread quantities of chert slabs, nodules, and debris indicating the source and primary reduction of the blade cores discussed earlier. Only production debris, no finished tools, was recovered. Independent specialists from Umpamalca and Hatunmarca probably visited the source to procure their raw materials. No evidence exists for ownership of the Pomacancha source. Although high-quality chert was localized, people from various communities were apparently able to visit the source and extract stone.

Some specialization in cloth production appears also to have existed in the Mantaro region (Costin 1993). At present the best indicator of cloth production is the frequency distribution of ceramic whorls (made in the Mantaro largely from recycled ceramic sherds), which are used as weights on wooden spindles for spinning yarn. A production index was created to measure the ratio of spindle whorls to 100 jar rims in our ceramic collections. In this situation, the

jar rims represent the amount of generalized household consumption (food storage and preparation) documented by the artifact collection; more jar rims thus represent the everyday trash of more houses or more time. Thus the number of whorls standardized by 100 rim sherds indicates the relative amount of spinning within the domestic context under study. Most settlements and households were apparently involved in cloth production, but the amount of production varied somewhat from settlement to settlement. For Wanka II, spindle whorls were found at all sites (excavated or surface collected), but the production ratio varied threefold from two to six whorls per thousand rim sherds. [Figure 6.1](#) shows the Wanka II production index for cloth (y axis) graphed against the settlement's elevation (x axis): As you move from left to the right on the graph, the higher that elevation becomes, the more a settlement was involved in spinning. "Sites located at higher elevation—closer to the *puna* grasslands and the pasturage of the camelids that supplied wool for cloth production—have more whorls than do lower elevation sites" (Costin 1993: 11). The regression analysis described a significant correlation between elevation and spinning activities. Prior to the intervention of the Inka empire, the importance of cloth manufacturing activities was thus determined to some degree by the availability of pasturage. Thus some specialization in crafts apparently mapped on local resource availability.

The pattern of spinning becomes more complex and difficult to explain with an adaptationalist model when the region came under Inka domination. Fourteen of 19 Wanka III sites had spindle whorls, and the variation in the production index was now greater (0 to 18) than prior to Inka conquest

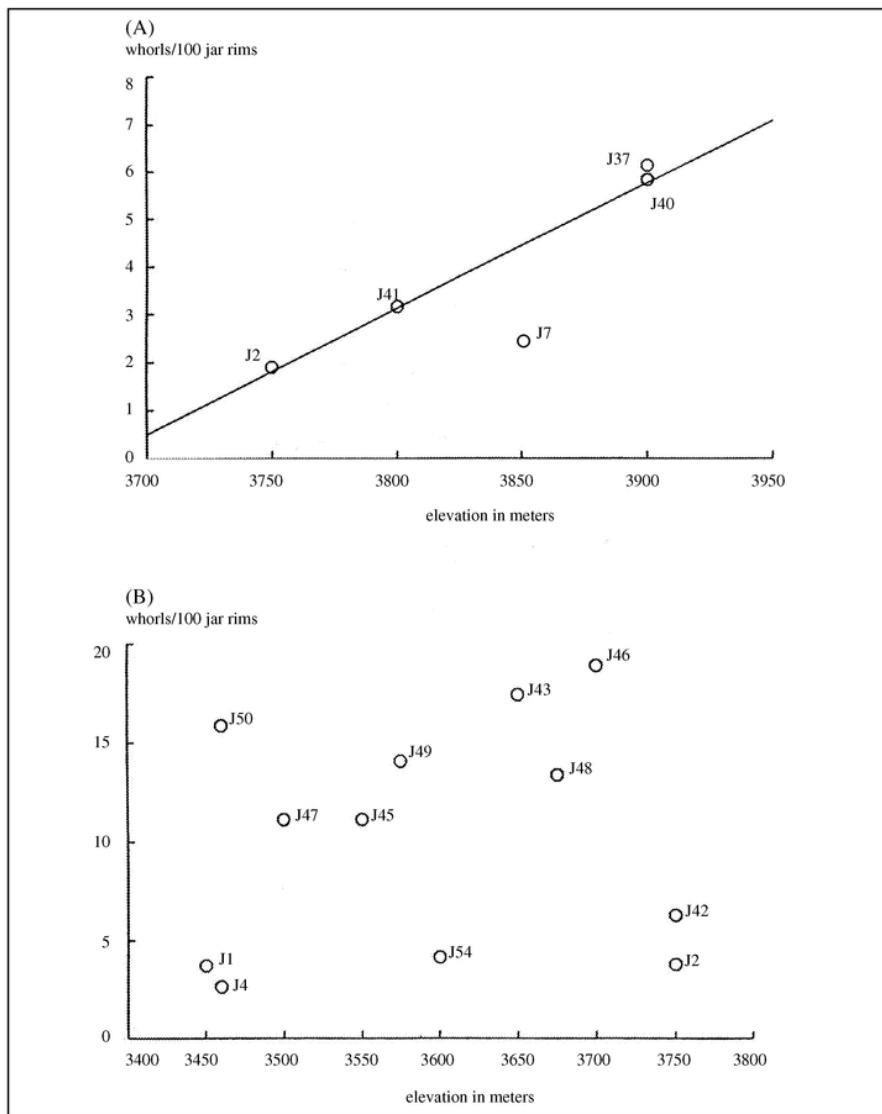


FIGURE 6.1 (A) Regression analysis of the Wanka II frequency of whorls (indicating spinning) graphed in correspondence with elevation (indicating increasingly favorable conditions for alpaca wool production at higher elevation). (B) During Wanka III, the relationship between elevation and spinning disappears. (Costin 1993: Figs. 3 and 11)

(Costin 1993: Fig. 11). Under the Inka, a slight trend, but no correlation, existed between production indices and the elevation of settlements (Fig. 6.1). This pattern suggests: (1) an increase in community specialization in cloth production, as some communities begin producing larger amounts of cloth than others, and (2) little determination of specialization by locally available resources. As discussed in the next section, the changing pattern of cloth production may well have been caused by increasing mobilization of cloth by

the Inka state.

The adaptationalist model predicts first that independent specialization will map on the availability of resources locally available to settlements. For food production, this prediction appears to be inaccurate; local communities under the emerging complex Hawaiian chiefdoms and the Wanka chiefdoms and Inka state retained generalized food production. Local communities differed in what they grew, based on local environmental conditions, but they also consumed different foods as a result. The available archaeological data, however, do support the prediction that local specialization in crafts will emerge. Stone adze production for the Hawaiian Islands and ceramic, stone blade, and cloth production for highland Peru all demonstrate that community specialization mapped on resource availability. The model also predicts that the amount of independent specialization should increase through time correlated with emerging management by central authorities. The evidence, however, does not support this prediction. The extent of independent specialization for the complex Hawaiian chiefdoms was remarkably small, and it was not managed centrally. Within the Mantaro Valley region, although community specialization existed, it too was modest, and quite remarkably did not increase in any consistent pattern with Inka imperial conquest. The adaptationalists successfully predict the development of local craft specialization, but they cannot show that this specialization is tied systematically to a more integrated economy and complex political forms. Why?

In both the Pacific and Peru, local environmental conditions and community-based solutions allowed for high degrees of self-sufficiency and only some part-time specialists in the limited crafts for which there existed both an economy of scale and localized distributions of required materials. The complex Inka and Hawaiian cases had relatively limited exchange, and their scales of specialization were modest and geared primarily to local exchange. In neither case was the exchange in products produced by independent specialists managed by central authorities, except perhaps to guarantee regional peace. In the Inka case, we see the apparently extraordinary situation where, despite the establishment of an effective and wide sphere of peace, there is no increase in specialization. This case supports a conclusion that central management did not actively encourage independent specialization. The complex Hawaiian and Inka economies did not depend on specialization, nor did the specialization and exchange that existed depend on central management.

The Political Model

If the commercial development and adaptationalist models for cultural evolution cannot demonstrate that specialization was pivotal in social evolution, should specialization continue to be a focus of our research? Yes, we believe that specialization played a significant political role (Brumfiel and Earle 1987). The political model reverses the primary direction of causality to understand the importance of specialization. In this view, specialization is not the outcome of environmental and demographic conditions, nor is it seen as a primary factor contributing to political complexity, but rather central leaders and their institutions may have sponsored specialization as a means to strengthen political and economic control. Some might say that this is a "chicken and the egg" dilemma common in the feedback relationships of cultural evolution. In part this may be true, but the type of specialization and the way it articulates to the broader social and economic system is quite different in the three models considered.

In the commercial development and adaptationalist models, specialists produce for a general market of commoners; specialist producers exist because of gains in *efficiency* resulting from underlying economic conditions. In the political model, specialists are attached to patrons or governing institutions for whom they produce special products or provide special services; attached specialists exist because of gains in *control* that they provide to the ruling segments of society. Independent specialists maintain rights of alienation; the goods that they produce are commodities that flow through a region's economy, channeled by social relationships but not chained by them. Attached specialists produce their goods for patrons who retain rights of allocation. These goods are inalienable, meaning that the social and political relationships within which they are produced set their value and circulation.

For the political model, the evolution of social stratification (not central management) is seen as the primary dynamic to be studied. As argued elsewhere (Chapter 13; Earle 1997; Johnson and Earle 2000), the evolution of social stratification is typically based on economic control grounded in the ownership of land. It can also be called a corporate strategy for political control (Chapter 1; Blanton et al. 1996). Status rivalry then involves intense competition among elites for dominion of land and the populations to work it. Elites are under constant competitive pressure and must search out opportunities to maximize economic control through prudent investment and management of surpluses in the various power strategies, including the intensification of subsistence resources (Chapters 4 and 5; Earle 1978). (The parallels to the capitalist entrepreneur are obvious.) Institutional elaboration to maintain and extend economic and political control underlies the increasing scale of complex societies (Johnson 1978). In this context, we must understand specialization as linked to explicit strategies to extend control.

Specialization with Staple Finance. For the Hawaiian and Inka cases, specialization was linked to the financial base of expanding chiefly institutions, for which specialists played various roles (Brumfiel and Earle 1987). Most chiefdoms and many early states depended on staple finance, as exemplified here by the Hawaiian and Inka cases, and, for societies based on staple finance, specialists arose here and there to support primary means of control based on land and its productive management. No regular relationship should be expected (or has been observed) for the emergence of political centralization based on staple finance and extensive economic specialization.

The peasant households that characterize staple finance are fundamentally organized according to the Domestic Mode of Production ([Chapter 1](#); Sahlins 1972; Chayanov 1966 11925]). What this means is that the goal of the primary producing units (the households) is self-sufficiency that pulls them away from external economic relationships. Households produce what is required of them and no more. Surplus is generated by a "rent" charged the tenant in return for access ([Chapter 5](#)); the emergence of staple finance is thus based on creating a fund of rent that each household must meet (Wolf 1966). But the "moral economy of the peasant" demands that the rent charged be restrained to a level that allows household survival (Scott 1976). The high productivity of the Hawaiian irrigated economy may represent an upper limit of what is possible with staple finance as the primary mode of finance.

In the Hawaiian chiefdoms, a proliferation of specialists provided at least five basic roles in the operation of the system of social stratification. First and perhaps most prominently, the paramount chief and other chiefs were surrounded by retainers who provided special goods and services to support a sumptuous lifestyle. The paramount moved surrounded by retainers entrusted with particular jobs such as carrying his feather fly-swatter or his elaborate spit bowl. Second were those specialists involved in information processing and administration. Particularly important were the district administrators, who established the community quotas needed for upcoming wars or ceremonies. Through memory, genealogists retained the lengthy and complicated pedigrees of chiefs that establish their rank and potential rights to office and associated land. Third were the land managers, who were responsible for guaranteeing the smooth operation of the subsistence economy so as to generate the surplus used in finance. They allocated lands to commoners and supervised work on chiefly lands and special projects, such as the construction of irrigation systems. Fourth were the warrior specialists, chiefs responsible for protection, combat, and enforcement. Warriors were personal fighters, methodically trained in the art of war. Directly associated with the chiefs were specialists who manufactured the equipment of war that included special protective clothing (wicker helmets and cloaks), wooden

spears and clubs, and the large double-hulled sailing canoes used for maneuvering and invasions. Fifth were the religious specialists, who conducted annual and special ceremonies related to warfare and legitimization. Priests, part of the ruling chiefly hierarchy, orchestrated elaborate ceremonies for success both in war and in maintaining the productivity of lands and people. Specialists produced sacred objects of social significance held by the priests in the *heiaus* and used as props in key ceremonies ([Chapter 14](#)). The list of specialists in the Hawaiian chieftdom was indeed long, but most labored to support chiefly rule.

In the Inka empire, the general list of specialists included the same five basic functions described above. With the much greater scale of the empire, the number of specialist jobs expanded. This can be illustrated in two areas of particular importance for state integration—information handling and military support. Information handling in the Inka empire involved administrators at the different levels of the hierarchy, inspectors sent out from the capital at Cuzco, record keepers, and message carriers. The record keepers, using a mnemonic device of knotted strings (*kipu*), monitored the payment and disbursement of staple goods through the warehousing system. The message carriers (*chaski*) were runners stationed along the roads who would carry messages in relay throughout the vast empire. Military support was greatly expanded because of the size of the army involved in external conquest and in suppression of internal rebellion. The amount of equipment required, such as clothing, sandals, shields, and maces, must have been staggering. Semi-industrial production of clothing for the army may have become quite common (see later discussion of weavers on Lake Titicaca). Murra (1980 [1956]) has argued that the Inka state developed a new class of specialists, the *yanacona*, who were attached directly to Inka lords, supporting their personal estates or the governing institutions of religion and administration.

For the Inka, the elaboration of governance institutions strained the state's ability to intensify the subsistence economy to generate a financing surplus. State managers appear to have developed a number of partial solutions. As proposed by the adaptationalist model, a need to intensify local production may require the development of community specialization in the most highly productive local staple goods. Thus, when state personnel set quotas for community tribute, the goods required by the Inka were tailored in part to the specialties of the local economy (LeVine 1987). In the Huallaga Valley, north of the Mantaro, two early Spanish documents (*visitas*) record how communities at different elevations and with corresponding differences in subsistence economies had different state quotas for staples, salt, crafts like ceramics, and labor services like mining and transport. We can assume that these allocations were based, at least in part, on pragmatic assessments of what were the most

productive resources at a given elevation.

For the Mantaro Valley, the differentiation of production activities that appeared among Wanka III communities may have been an outcome of differentiated state demands on local communities. Although little changed overall from Wanka II to III in the household economies ([Chapter 11](#); Earle et al. 1987), exceptions reflect evidence for intensification and differentiation in textile and agricultural production. For textiles, a threefold increase in spindle whorls demonstrates a surplus production for state demand (Costin 1993: 17). At the same time that most Wanka settlements increased cloth (or spun yarn) production substantially, others, with few or no spindle whorls recovered archaeologically, were apparently not responsible for a cloth quota.

As seen clearly in [Fig. 6.1](#), the conquest of the Mantaro apparently changed the focus of some settlements' activities. Although not conclusively demonstrated, it would appear that some smaller settlements were quite specialized, producing specific goods for the state (Earle et al. 1987). Surprisingly, three of the Wanka III settlements without spindle whorls were located in the *puna* where camelid production might have been expected; these may have been specialized mining communities. Two others yielded large quantities of hoes and virtually no evidence for craft production of any kind; these may have been geared primarily to food production for the state. These changes are largely as might be expected by the adaptationalist model, but the goal of intensified production was different, state finance vs. community support. Where community support was the goal, communities maintained different patterns of consumption so as to continue self-sufficiency; many of the Wanka III communities continued the pattern of highly generalized production seen prior to Inka imperial expansion. But where the goal was state finance, the central objective to maximize potential surplus may have resulted in the formation of some smaller communities specialized in production of the goods most desired by the state.

An extreme example of hyperspecialization to maximize surplus appears to have been the creation of massive Inka state farms (Wachtel 1977; LaLone 1982). In the Cochabamba Valley of Bolivia, as an example, the state removed the indigenous people and ordered the valley floor to be drained and irrigated to support intensive agriculture to supply the Inka military. The state moved a *mitmae* colony into the valley to oversee a storage complex of several thousand silos to hold the farm's produce. Seasonally people came into the valley to farm the region as part of their community obligation to the state. In the Mantaro Valley (D'Altroy 1992), a similar state farm may have been built south of the Inka administrative center. Half of the state storage silos in the Mantaro were located close to the administrative center, one quarter were scattered close to local Wanka settlements, and one quarter of the most regular

storage complexes were clustered together along the eastern edge of the valley away from both the center and local communities. This region may have supported a state farm similar to that described for Cochabamba. The increase in staple production to fuel the Inka empire ultimately could not be funded alone by mobilization from local communities; it required the development of these special projects.

A major limitation to staple finance is its decentralization. Because of the bulkiness and weight of staple products, transportation of the goods is prohibitively expensive over long distances (Chapter 8). Staple finance is therefore suitable primarily for regionally compact societies, such as a Hawaiian Island chiefdom, and what Renfrew (1975) called the early state module (a city state). Such polities typically are only about 40 km across (Drennan 1984).

For an imperial state, such as the Inka, the decentralized political economy based on staple mobilization created problems with finance that must have been extraordinarily difficult to control (Chapter 8). In the Inka case, for example, each region had its own administrative center and maintained its own separate stores to support local state activities. Local storage, however, also increases the opportunities for local revolt. Rebels could seize the stores and use them to fund action against the central government. In order to solve the problem of decentralization, most complex societies use some form of wealth finance in which attached specialists play a central role. As discussed in Chapters 1, 8, and 9, because wealth is easier than bulky staples to transport, wealth finance permits an expansion in the regional scale of the polity while retaining centralized control over the currency of finance. Wealth collected from conquered populations can be moved into the state's center, where it is held until used as payment. A good example of this was the Aztec empire. By centrally storing wealth, control could be maintained even in far-flung empires and vertical ties of dependence could be strengthened (Brumfiel 1987).

The use of wealth in the Hawaiian chiefdoms and in the Inka state (both primarily based on staple finance) illustrates how the production of inalienable objects by attached specialists expands with the elaboration of governing institutions. In a basic staple finance system, the needed subsistence goods are collected by the chief and distributed directly to people assisting him. But what role does wealth play in the operation of a staple finance system? It cannot replace staples as a means of compensation; no matter how valued are metals or cloth they cannot be eaten. In an elaborated system of wealth finance, the solution is to have the wealth convertible to subsistence goods in a market exchange; this was the apparent solution for the Aztec state (Brumfiel 1980). It requires the use of alienable objects for payment that eventually take on the function of currencies.

In the Hawaiian and Inka cases, and I suspect in other early stratified societies (especially chiefdoms), wealth was *not* easily convertible into subsistence goods. It circulated in a separate sphere of exchange and was inalienable. Although not directly convertible into subsistence goods, this inalienable wealth was still inextricably linked to access to subsistence goods. To be specific, wealth acted as a highly visible symbol of status, meant not as abstract prestige but as a marker of status, the holder of which had explicit rights to income in the staple finance system. Without written contracts, the physical demonstration of status may define one's rights in the sociopolitical hierarchy, especially the rights of subsistence support. These objects, produced by attached specialists, would have been inalienable; they would be given by high-ranking to lower-ranked chiefs to materialize political duties and rights.

At this point, specialization of wealth takes on a different role. To maximize central control, wealth objects must be scarce and difficult to fake. They must be rare (either because of the material used or the skill in labor involved) and their allocation must be controlled. The Hawaiian and Inka cases illustrate how the control of wealth production increases as the scale of political institutions expands.

In the Hawaiian chiefdoms, staples were not stored or moved over distances; staple finance was highly decentralized such that the paramount chief and his large retinue of advisors and functionaries moved through the chiefdom living in turn on the staple products of dependent communities. This "moveable feast," as it was called in feudal Europe, was necessary as the large retinue quickly devoured locally available surpluses. Obviously this decentralized staple base was fraught with problems of control that resulted in local rebellions against the paramount chief. It is my argument that the wealth, as symbols of *legitimacy* ([Chapter 7](#)), helped to overcome this weakness. Wealth objects, which included the feathered cloaks (*'ahu'u*la), helmets, standards (*kahili*), and necklaces, were crafted by skilled specialists of rare raw materials. Wealth remained scarce because of the natural rarity of certain feathers, the labor needed to collect the feathers, and the skill labor required in feather working. Next I discuss the manufacture of these inalienable objects by attached specialists, and then turn to their ideological significance in [Chapter 7](#).

The Creation and Use of Hawaiian Feathered Cloaks. The most important objects of wealth and symbols of power were the feathered cloaks (Malo 1951 [1898]: 76-77; Brigham 1899, 1903, 1918; Buck 1957: 215-231; Cummins 1984). The finest cloaks were full length and brilliant yellow with contrasting red designs. They were made with a fine fiber net base onto which were fastened small bundles of feathers. On a single cloak, hundreds of thousands of these feathers created a shining, velvet finish of incomparable beauty (Rose 1980).

Access to and control over such wealth items illustrates well the linkage between craft specialization, inalienable objects, and symbolic representation in complex polities (compare Brumfiel 1987). On the Hawaiian Islands, feathered cloaks could only be worn by high-ranking male chiefs "as an insignia in time of war and when they went into battle" (Malo 1951 [1898]: 77). They were also worn on special ceremonial encounters between high chiefs as when Kalani'opu'u, the paramount chief of Hawai'i, and his supporting chiefs came out in full dress to meet Captain Cook (King 1784: 16-17). As illustrated in [Chapter 7](#), seven chiefs, including Kalani'opu'u, were wearing feathered cloaks. In a similar meeting, the new paramount Kamehameha I was dressed in a full-length yellow cloak when he came out to greet Vancouver (Vancouver 1798: 126). Vancouver, as representative of the British crown, was obviously an important potential ally for Kamehameha. Cloaks were also worn when Captain Cook was killed by the Hawaiians and later when his bones were returned to the British (King 1784: 137).

Cloaks varied considerably in size, shape, and color (type of feathers used), which denoted the relative status of the high chiefs and distinguished warriors who wore them. For example, the brilliant large circular cloaks of *mamo* feathers were battle regalia for an island's paramount (Malo 1951 [1898]: 77), and the smaller rectangular cloaks with tropic bird and man-of-war feathers were worn by lower-ranked chiefs (King 1784: 136-137). As inalienable objects, the giving and receiving of these objects were highly restricted, materializing the designation of social position and political relationships.

The control of these inalienable objects was manifest at all steps in the system—initial procurement of the feathers, their fabrication into cloaks, and presentation. The feathers themselves were procured by bird hunters (*po'e hahai manu*) who used sticky bird lines and nets (Buck 1957: 217). They were probably independent agents collecting the valuables within their own community (Lass 1998). On the island of Hawai'i, archaeological survey in the uplands has located camps apparently used by these feather collectors (Athens et al. 1991); the camps date late in the sequence (A.D. 1450-1550) when the complex chiefdoms had emerged. The bird skins or feather bunches were then valuables perhaps used in exchange but especially used as tribute payments. When Captain Cook first landed on the island of Kaua'i, he was offered "great numbers of skins of small red birds for sale, which were often tied up in bunches of twenty or more, or had a small wooden skewer run through their nostrils" (King 1784: 207).

Later, on the island of Hawai'i, when Cook first visited the paramount chief Kalani'opu'u, Cook observed an abundance of tributary gifts to the chief that included "a vast quantity of red and yellow feathers, tied to the fibers of coconut husks" (King 1784: 28). Feathers were an important annual tributary

payment made to the paramount chief by communities where birds were found. As described by Malo (1951 [1898]: 77):

The lands that produced feathers were heavily taxed at the Makahiki time, feathers being the most acceptable offering to the Makahiki idol. If any land failed to furnish the full tale of feathers due for the tax, the landlord was turned off (*hemo*).

The paramount chief, as the earthly manifestation of the Makahiki god Lono, received the feathers directly. The staple finance system required payment in a rare raw material from which the inalienable chiefly objects (the cloaks and other feathered objects) were fabricated.

Little is known about the organization of production for the feathered objects, but it seems likely that this was done by specialists attached directly to the paramount and perhaps other high-ranking chiefs. A high-ranking Hawaiian born in 1830, Kepelino writes that the cloaks were "woven by persons skilled in the art into fine nets" (Beckwith 1932: 134). This description is found in a general account of chiefs and attached specialists (military guards, genealogists, land experts, and personal attendants). The implication by context is that the feather weavers were also part of a high-ranking chiefly household.

The paramount chief, by controlling the surplus flow of staple goods, was in the best position to support attached specialists including feather weavers. Linnekin (1987; Lass 1998) argues that these crafters were women and likely members of the chiefly families. In this situation, the craft specialist functioned as a converter. Supported by staples mobilized by the chiefly redistribution, she manufactured a highly visible wealth. The craft specialist in this role linked the mobilization of food and raw material production and the creation of signified wealth for controlled distribution ([Chapter 7](#)).

The distribution of the feather cloaks by the paramount chief shows how they were used as inalienable objects to define political statuses. In his inventory of the feather cloaks, Brigham (1899, 1903, 1918) records the history of all capes known at that time. The history of transfer is recorded for fifteen capes: one by inheritance and fourteen by gift from a paramount chief. The majority of these were given by Kamehameha III to western dignitaries or others in his service. Recipients included William Lee (first Chief Justice of the Hawaiian Islands), William Miller (British representative), Fredrick Byny (who attended Liholiho on his visit to London), Samuel Whitney (first missionary to Kaua'i), J. H. Aulick (Commander, U.S. Navy), and L. Kearny (Commander, U.S. Navy, on diplomatic errand). Two dramatic examples of cloak gifts were recorded in early explorer accounts. When Captain Cook was first visited by the Hawaiian paramount, he was given several cloaks:

They [Kalani'opu'u and Captain Cook] had scarcely been seated, when the king [paramount chief]

rose up, and in a very graceful manner threw over the Captain's shoulders, the cloak he himself wore, put a feathered helmet on his head, and a curious fan [feathered *kahili*] into his hand. He also spread at his feet five or six other cloaks, all exceedingly beautiful, and of the greatest value. [King 1784: 17]

Similarly, Vancouver received a fine cloak from the new paramount Kamehameha I:

Kamehameha conceiving this might be his last visit, presented me with a handsome cloak formed of red and yellow feathers, with a small collection of other native curiosities; and at the same time delivered into my charge the superb cloak that he had worn on his formal visit on our arrival. This cloak was very neatly made of yellow feathers; after he had displayed its beauty and had shown me the two holes made in different parts of it by the enemy's spears the first day he wore it, in his last battle for the sovereignty of this island, he very carefully folded it up, and desired that on my arrival in England, I would present it in his name to H.M. King George; and as it had never been worn by any person but himself, he strictly enjoined me not to permit any person whatever to throw it over their shoulders, saying it was the most valuable in the island of Hawaii, and for that reason he had sent it to so great a monarch, and so good a friend, as he considered the King of England. [Vancouver 1798: 271]

These two formal presentations show clearly the importance of the cloaks as bestowals between highest-ranking individuals. Almost surely the exchanges were meant as a ceremony of formal alliance. (See Brumfiel 1987 for additional discussion of wealth exchange as a means of validating political relationships.)

The other main context for transfer involved warfare. Cloaks were given to great warriors in recognition of their valor, and these cloaks were seized from those defeated in battle.

The *ahu-ula* was also conferred upon warriors, but only upon those who had distinguished themselves and had merit, and it was an object of plunder in every battle.

Unless one were a warrior in something more than name he would not succeed in capturing his prisoner nor in getting possession of his *ahu-ula*. [Malo 1951 [1898]: 77]

Although it is implied that a successful warrior received a cloak directly in plunder, this appears not to be strictly the case. The only historically documented case of such seizure is one cape in the Bishop Museum (number 2 in Brigham's 1899 inventory); this cape was seized by Kamehameha I when he slew Kiwala'o, rightful heir to the paramountcy of Hawai'i. The large number of cloaks listed by Brigham as given by the Hawaiian rulers early in the historic period strongly suggests that the cloaks captured in the rapid expansion of the newly formed Hawaiian state went not to the victorious warriors but to the victorious paramount, who then distributed the cloaks to his supporters and allies.

The pattern of ownership and distribution of the cloaks was identical to the system of land tenure and may have been linked to it. All lands were the property of the paramount chief, and, after his victories in wars of succession and conquest, the paramount's newly acquired lands were distributed to his high-ranking relatives and military supporters. On the basis of this parallel, I

suggest that the elite regalia including the cloak was a declaration of right to a landed estate on which the chiefs depended for their income. The Hawaiian cloaks, a highly visible and limited wealth, were symbolic of a system of status and resource access on which the Hawaiian chiefdoms depended. Control over the raw material and fabrication of the cloaks translated into a control of the symbolism of power and its religious legitimization.

The Creation and Use of Inka Cloth and Metal. In the Inka empire, the role of wealth produced by attached specialists is most apparent in cloth and metals. These wealth objects served to define visually the status divisions within society. In clothing, status was marked not by tailoring but by different grades of cloth and kinds of ornamentation (especially of metal, shell, stone beads, and mica bangles)(Murra 1962: 711; [Chapter 9](#)). Access to the wealth of personal display was essential to demonstrate one's position with its concomitant economic and political rights. Cloth was of particular importance in the Andes because of its social uses (Murra 1962; Costin 1993). Often a simple distinction is drawn between rough, domestic cloth used in everyday contexts and the fine cloth used for elite clothing, to wrap the idols, in sacrifice, and in similar special contexts.

Common cloth was used in everyday life, and much was apparently produced by each family for itself. Spindle whorls were a common artifact in most households, although the amount of spinning varied somewhat according to the available raw materials (see earlier discussion).

Such common cloth was also part of staple finance. The significant increase in the numbers of spindle whorls found in some households following Inka conquest was apparently a result of increased production geared to state demand (Costin 1993). Under the Inka, households produced a cloth quota, perhaps one blanket a year, in return for access to the community herds owned by the state through rights of conquest (Murra 1962: 715). Such cloth would have been used by the state to support commoners working for the state in endeavors such as building projects and military operations; the absence of spindle whorls at some Inka-period settlements may indicate that these communities did the business of the state and so were supplied with items like the cloth collected by staple mobilization. The development of craft specialization in everyday objects may thus have been a direct outcome of the intensification of production dictated by the state financial demands.

Special cloth also was used in the social life of all Andean people. The major life crises and marriage ceremonies were marked in the Andes by exchanges that frequently involved cloth. At birth, puberty marriage, and death, cloth was displayed, ceremonially worn, and exchanged. After death the Inka mummies were annually taken out and paraded around dressed in sumptuous

cloth (Guaman Poma 1987 [1614]). In order to function in society—to define one's status, to obtain a wife, and to create and maintain social relations—access to cloth and other valuables was essential. This was not a creation of the state, however; identical conditions existed in stateless societies generally (Chapter 2). During Wanka II, prior to Inka conquest, the equipment of spinning and weaving was concentrated in elite households (Costin 1993: Eigs. 4 and 5), suggesting that the cloth used in social exchanges was produced differentially within the households of local Wanka chiefs.

Throughout much of Andean prehistory, weavers of fine cloth may have been part of elite households for which they produced objects for elite use and socially significant, restricted exchanges. Generally, the high quality of Andean textiles argues convincingly for specialists with exceptional skill in weaving for at least a thousand years before the Inka state emerged. Examples of such fine textiles include the technically elaborate Necropolis textiles decorated with embroidery that date to about 200 B.C. (Lumbreras 1974). In its simplest form, multiple wives of local leaders may have been specifically involved in weaving. Cock (1977), in his analysis of Collagua *kuraka*, mentions that artisans, especially weavers and smiths, belonged to local elites for whom they produced goods for distribution.

With the formation of the Inka state, weavers of fine cloth became involved in semi-industrial, large-scale production for state uses. Weavers, recruited from local communities, were brought together to form specialist villages like Millerea on the northern shore of Lake Titicaca, where "one thousand" Aymara weavers manufactured cloth for the heavy demands of the military, which used cloth both to differentiate status and to reward participation (Costin 1993; Murra and Morris 1976; Murra 1982). *Aclla* (women) and *qompi-kamanyoq* (men) labored to weave *qompi* cloth. Cieza (1984 [1551]: 432), for example, mentioned the presence of *aclla* at the administrative center of Hatun Xauxa in the Mantaro Valley and Morris (1974) has identified a large, enclosed compound that he believed housed *aclla* at the center of Huanuco Pampa. The compound contained forty-five large, regular structures, spacious plazas and corridors, and a distinctive concentration of spindle whorls and weaving instruments. At present, we do not know the kind of cloth being manufactured, whether *qompi* or domestic, but the semi-industrial scale of production is well documented. LeVine (1985) has identified a similarly organized compound at the nearby center of Pumpu, where large-scale production may also have taken place.

The state received cloth through all forms of production—as part of *corvée* labor obligation, as gifts from regional chiefs, and as production from institutional specialists. The large amounts of cloth received filled many of the state warehouses through the empire. The extent of the cloth stores must have

been impressive even to the conquistadors, who were more interested in the precious metals:

Among the eyewitnesses of the invasion, Xerez reports that in Caxamarca there were houses filled to the ceiling with clothes tied into bundles. Even after "the Christians took all they wanted," no dent was made in the pile. "There was so much cloth of wool and cotton that it seemed to me that many ships could have been filled with them." As Pizarro's army progressed across the Inka realm, similar stores were found at Xauxa and in Cuzco. In the capital, it was "incredible" to see the number of separate warehouses filled with wool, rope, cloth both fine and rough, garments of many kinds, feathers, and sandals. Pedro Pizarro mused some 40 years later about what he had seen as a youth: "I could not say about the warehouses I saw, of cloth and all kinds of garments which were made and used in this kingdom, as there was no time to it, nor sense to understand so many things." [Murra 1962: 717]

The state used these massive stores of cloth as a means of payment. Cloth was paid for state services such as carrying tribute or a regional idol to Cuzco. Particularly important were the payments from the ruling Inka to local chiefs in return for their special services. Cloth, with its symbolic definition of status and its exchange value, was given over to the local leaders who could use the cloth directly in ceremonial display of his status or exchange it for desired goods and services.

The Inka state centralized the distribution of cloth by establishing payment in cloth both from commoners and elites. More revolutionary, it established large-scale production of the cloth by specialists, which provided a large volume of wealth for distribution similar to the feathered cloaks of the Hawaiians. At present, it appears that the fine cloth did not function as a currency or a commodity. Rather they were inalienable objects that represented status to those who received them in recognition of their political relationship to the state (see [Chapter 8](#)).

The manufacture and use of metal and other objects of personal decoration illustrate a similar pattern of production and distribution as the cloth. Well before the Inka state arose, the Andes witnessed the independent development of complex metallurgical technology involving smelting and fabrication of gold, silver, copper, lead, and a number of alloys (Lechtman 1979, 1984). Metal working was quite sophisticated, involving techniques such as smelting sulfide ores (Lechtman 1979), plating (Lechtman 1979, 1984), and lost-wax casting. Simpler procedures using native metals and oxide ores, and fabrication with sheet-metal hammering and cutting, were common through the region. Uses for the metal were quite varied from place to place, including institutional decoration (gold and silver sheet covered the walls of Inka buildings), personal ornamentation (pins, disks, headbands, ear spools, and the like), and simple technology (needles, axes, bola weights).

Metal was highly valued for its symbolic identification and exchange value. From at least Chavin times (800 B.C.), gold and silver were symbols of rank,

power, and religious force (Lechtman 1984). In Inka cosmology, gold was the sweat of the sun and silver was the tears of the moon, paired high gods. Similar to the Hawaiian pattern, Inka nobility used metals in their lives to identify themselves with the celestial realm, symbolized by the colors of metal (Helms 1981b). The sumptuous metal wealth of the Inka described by Lothrop (1938) was remarkable. Pieces included elaborate symbols of the high gods (golden suns, silver moons), life-size golden statues of ancestors, and great vessels of gold and silver.

The use of metals in status and political display was central to the legitimization of relationships within the Andean world. In Cuzco, annual ceremonies displayed metal wealth. The ancestral mummies and idols were bedecked in metal when they were paraded through the city, and imperial fertility ceremonies used artificial golden gardens of maize as their stages (Lothrop 1938). Worldly and spiritual powers were conveyed by restricting the wearing of certain metal objects, such as the beautiful ear spoons, to the Inka rulers (Lechtman 1984). The wearing of the ear spoons, along with special cloths, was a visual statement of status and associated position. Along with cloth, metal was also a standard gift at life-crisis ceremonies (Murra 1962). During the marriage ceremony, the woman gave the man metal and a wool tunic (Rowe 1946: 286). Morúa (1946 [1590]: 64-65; referenced in Murra 1962: 719) described the gift by an Inka ruler to his bride of a fine cloth and a metal pin. Metal was also frequently included as part of the burial offering.

The foremost goal of the conquering Spanish was to seize precious metals, and it was in the Andes where their dreams were realized. The famous ransom of the Inka Atawallpa is said to have been 238,000 ounces of gold, filling the ruler's cell higher than a man could reach (Lothrop 1938). The Empire had been manufacturing and stockpiling massive amounts of metal, but why? Partly the metals displayed at ceremonies of legitimization were the critical prop in defining the distinctiveness and sanctity of the ruling Inka. In addition, however, metal may have come to be an important means of payment.

Some of the best information on the uses of metal and how these uses changed with Inka conquest comes from excavation of twenty-nine domestic patio groups in the Mantaro Valley (Costin et al. 1989). Metal products, including pieces of silver, copper, and lead, were recovered from 120 of 2,168 nonburial proveniences excavated (total ubiquity, 5.5%). Forms included ornaments (silver and copper pins, disks, and pendants), various copper and tin bronze tools (needles, axes, chisels, and weights), lead tools (possible spindle whorls or weights), and lead ceramic mends or plugs.

Prior to Inka conquest, metal was found in both elite and commoner households of the Wanka, although the elements of personal decoration (especially the silver disks that were sewn onto clothing) were almost exclusive

to chiefly households. Evidence of manufacturing debris was concentrated in these same elite contexts, suggesting some degree of control by attached specialization.

Under the Inka, the overall occurrence of metal increased (from pre-Inka ubiquity of 3.8% to 7.0% of proveniences excavated). More dramatic were the shifts in the types of metals recovered. During the pre-Inka period, the most common metal was silver used in ornamentation. It was mined regionally throughout the Central Andean highlands. Then, with Inka conquest, silver became proportionately rarer. Was it being expropriated by the Inka imperial uses of display? Silversmiths were described as having worked in the administrative center Hatun Xauxa (Cieza 1984 [1551]: 432). At the same time, copper increased dramatically in overall occurrence (1.5% of provenience in Wanka II to 5.6% in Wanka III). In part, copper replaced some ornamental uses of silver. For the first time, copper disks were found, as silver disks became quite rare. Small pins of both silver and copper were made in identical forms during the Inka period.

The Inka state may well have been directly involved in the manufacture and distribution of these copper objects (Costin et al. 1989). Prior to Inka conquest of the Mantaro, coppers were an arsenic bronze, most derived from smelting local sulfide ores (Howe 1983; Lechtman 1976). During the Inka period, the coppers of the Mantaro contained significant amounts of tin that must have come through long-distance exchange with the southern highlands. As Lechtman (1979) has discussed, tin bronze became a uniform metal throughout the Inka empire. Although a major study of this point is wanting, I would argue that the manufacture of the coppers had become centralized and under direct state supervision. As argued in [Chapter 9](#), the control of metal production by establishing a required recipe using tin-based alloys was sufficient to allow control over the manufacture of these objects used both in everyday life and for status-marking objects.

Direct evidence for the organization of metal production under the Inka is still quite limited. Mining is said to have been done as part of the annual labor tax (*mit'a*) (Rowe 1946). On the basis of her analysis of the ethnohistoric documents, Moore (1958: 39) suggests that mines were the property of the Inka state, similar to agricultural and pastoral resources, but that ore production and metal fabrication were under the control of local leaders, who delivered the wealth objects as gifts to the Inka. Specialists, the miners and craftsmen, were then exempted from regular labor tax. At least in part, therefore, the production of metals was closely tied to the more general system of mobilization through staple finance. Attached specialists working for local leaders were supported by local elites who then delivered up the finished goods as gifts to the state. This is *not* state-controlled production; rather it was

a continuation of the pre-Inka pattern but redirected by the Inka.

However, the Inka state evidently expanded metallurgy and to some degree controlled it through special communities of attached specialists. Murra (1980 [1956]) has brought together ample evidence for full-time specialist smiths attached to the state. These individuals, such as the highly skilled smiths of the Chimor state, were moved to the capital at Cuzco and to other administrative centers, where they produced goods for the state, for its direct institutional use and for distribution to local leaders. Cieza (1984 [1551]) mentioned smiths located in all the Inka administrative settlements. These smiths were most probably *yanacona*, individuals removed from their community association and working full time for the state (Rowe 1946: 268).

To summarize briefly, prior to Inka expansion in the central Andes, the production, distribution, and use of wealth were similar to the pattern seen in the Hawaiian chiefdoms. Production of wealth objects was mainly handled by specialists attached to elite households, and the metal goods, which constituted the bulk of those pre-Inka wealth objects, were distributed over relatively short distances to be used especially as markers of social status. To the degree that the objects denoted the specific status of individuals, they must be considered inalienable, circulating in special spheres of exchange. With Inka expansion, the local production of metal continued and became part of the more general mobilization of goods to support the state. Dramatically, the Inka state appears to have taken charge of production in key wealth objects, especially the metal and cloth, and to have created large-scale systems of manufacture, warehousing, and long-distance movement.

Murra (1980 [1956]) develops a most interesting argument for an economic transformation under Inka domination. Production of cloth and metals does appear to have been handled indirectly, with each community required to provide goods (cloth and metal) as part of the broader labor assessment. But the Inka shifted the emphasis of production to key wealth items made by specialists removed and relocated away from their local communities. The implication is that wealth, used in ceremonies of legitimization, as status markers, and as exchange valuables, was being produced by full-time specialists working for Inka state institutions.

The reasons for this significant change in the focus and nature of production that was imposed with Inka conquest appear to be two. First, the larger volume of production surely had certain economies of scale. Second, and more important, the centralization of production effectively brought production under direct state control. This would have strengthened the economic foundation of the empire and helped counterbalance the centrifugal forces inherent in a staple finance system ([Chapter 8](#)). The changes in craft specialization were evidently highly selective and implemented from the top

down, imposed by the Inka strategically as a means to diversify their finance by incorporating payments of special objects for domestic use and for special status marking (Costin et al. 1989).

Conclusion

To return to the initial question: What is the relationship between specialization and the evolution of complex societies? In complex societies such as the Hawaiian chiefdoms and the Inka empire, the economic basis of stratification was control over staple production. Ownership of productive resources, especially land, was most basic. In these situations regional exchange, linking local communities, was remarkably little developed except in certain raw materials and craft goods. In this context, where regional exchange was limited and on a small scale, the independent specialists working for a general market were comparatively unimportant. In at least these cases, local specialization and intercommunity interdependence were neither the preconditions for nor the outcome of complex society.

Rather, specialization appears to have developed as an outcome of the development of social stratification and large political and religious institutions. These attached specialists performed a variety of functions that included monopoly of force, economic management, and ceremonial legitimization. In terms of craft production, the manufacture of special wealth (feathered cloaks, cloth, and metal) served strategically to control the society both economically and symbolically. The items of wealth served as means of payment, as symbols of legitimate power, and as evidence of sanctity. To understand the evolution of attached specialists from the retainers of complex chiefdoms to the semi-industrial workshop of states is to understand the role of their products, that is, the society's wealth, in the developing system of stratification.

In [Chapter 12](#), we see that the relative mix of staple and wealth finance can be quite different under contrasting conditions of an emergent political economy. In Bronze Age Denmark, the role of bronze metalworkers producing both weaponry and display wealth may have been exceptionally important. But that is getting ahead of our story.

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Style and Iconography as Legitimation in Complex Chiefdoms

Complex chiefdoms are associated with the emergence of "great styles." Gordon Willey, in his influential article "The early great styles and the rise of pre-Columbian civilizations" (1962), recognized the organizing role of iconography in both the Olmec and Chavin cultures. Both of these cases, and similar societies such as the Mississippian of the American Southeast (Muller 1984), the Late Neolithic of Britain (Bradley 1984), and the northern European Bronze Age (Kristiansen 1987), are characterized by broadly related styles that unite isolated and politically separate regions. Why these great styles developed and how they functioned in emergent civilizations are intriguing questions in the study of social complexity. This chapter examines the way iconography, and its stylized representation, serves to legitimize systems of inequality and control built into complex chiefdoms. Chiefs materialize their distinctiveness and sanctity in material objects ([Chapter 14](#)), and these objects are produced and distributed within carefully controlled political economies ([Chapter 6](#)). Setting the production and meaning of an elite style is, in my analysis, linked irreparably with the emergent political economy. By controlling the economy, chiefs are able to set the agenda and institutionalize their position of domination.

Before jumping into the analysis of style in complex chiefdoms, I set up a materialist framework within which we may consider the changing nature of style and iconography in the evolution of human society. Style can be thought of as patterned variation in appearance. To archaeologists, style has two conceptually different meanings (Sackett 1977, 1982, 1990; Plog 1980), a passive meaning and an active meaning. First, and most commonly, it is viewed as passive tradition. As people become socialized, they learn how properly to make and decorate objects. In Deetz's terms, each craftsman holds a mental template, "idea of the proper form of an object [that] exists in the mind of the maker" (1967: 45). Style is largely implicit, because the choice between alternative forms is determined by custom. For the archaeologists, stylistic differences such as these are useful to define "archaeological cultures" that retain unconsciously different behaviors.

Second, style is viewed as an active medium of communication by which individuals and social groups define relationships and associations (Wobst

1977; Conkey 1978). Elements of style, as in objects used in ceremonial display, are chosen purposefully to signal social relationships and group membership. Thus style acts as a critical prop in social drama as it functions to form, maintain, and transfigure social relations.

The active meaning of style is deeply rooted in anthropological and archaeological inquiry. Going back to Boas, Benedict, and Kroeber, cultures have been viewed as pattern imbued with meaning and represented objectively in arts and crafts. Iconography has continued to hold a central place in archaeological research in both North America and Europe. Recently studies of style have become popular in European archaeology. Hodder (1982a, 1990) insists that style is not arbitrary but results from the active selection of meaningful objects that can be understood only in their broader social context. Throughout these works is the assumption that arts and crafts make concrete the ways individuals in their social contexts perceive and order reality.

Simply recognizing the importance of ideology and active style in cultural systems should not obscure the inherent difficulties with such studies. Attempts to attach specific meaning to iconography are usually unconvincing, except in the exceptional cases where strong cultural continuity exists with the ethnographic present. Unique to individual cultures, iconography serves to identify cultural traditions, but it does little to explain cultural processes and the evolutionary significance of ideology.

In this chapter I analyze the function of style as a critical aspect in cultural evolution. For this purpose, an active view of style is appropriate. While it may be impossible to recognize the specific meaning of prehistoric iconography, the formal and functional properties of ideological systems may be understood by the nature of their presentation, the context of their use, and the pattern of their distribution. We need not project ourselves back into past cultures except in explicit behavioral ways. Such work should also permit cross-time and cross-cultural research.

The analysis of symbolic forms in relation to symbolic functions, which is the central problem of social anthropology, can be greatly enhanced through comparing different cultural forms that are carried by different groups. Thus one aspect of our work is to reduce cultural heterogeneity to functional uniformity. [Cohen 1974: 86]

Although the meaning of symbols may be culturally specific and unknowable archaeologically, the contexts of their use on specific material forms in specific social and political situations should show regular cross-cultural patterning. The rudimentary outlines for a general theory of ideology and style should place them within the broader context of cultural evolution and political economy.

This approach to ideology and style is not new in archaeology going back to

the seminal work of Flannery (1968), Drennan (1976), Wobst (1977), Conkey (1978), and Stephen Plog (1980), among others. What I would like to do is to summarize briefly the potential contribution of this approach to style within an evolutionary framework worked out by Allen Johnson and myself (2000). This evolutionary framework presents a developmental continuum condensing several evolutionary lines with distinct characteristics. Although any brief overview may appear unilinear, we have explicitly emphasized the environmental, technological, and historical factors that give rise to alternative pathways to complexity. However, the driving force to evolution is evidently material in the cases that we examined—a cycle of population growth, technological development and intensification, warfare, and exchange. These are conditions that require group action and leadership and create opportunities for control and stratification. In our argument, we have tried to address the critical role played by ceremonialism and ideology at four levels of development—the family, the local group, the chiefdom, and the state ([Chapter 1](#)). New patterns of ownership and control emerge (Earle 2000).

Family-level societies are low-density, informally organized hunter-gatherers or simple horticulturists. Relationships within camps are close and familistic; beyond the camp, networks of reciprocal bonds are formed to permit flexible movement. In the absence of a formalized local group and with the need for personal external ties, it is reasonable to expect that stylized display would be fairly limited. The active projection of group identity would be inappropriate where groups are informal and noncorporate. For example, Conkey (1978) discounts stylistic types for most of the Lower Paleolithic when social groupings were probably small and biologically based. In family-level societies, active use of style may be appropriate for special objects used to establish and maintain the regional exchange web. The ground stone axes of Australia used in numerous social exchanges are a good ethnographic example (Sharp 1952); the Acheulian hand ax of the Lower Paleolithic might be another (Wobst 1977).

Local groups (village-level society) of several hundred form under conditions of higher population density and subsistence intensification that often result in warfare. Especially important is the elaboration of corporate groups (clans and lineages) that restrict access to (own) productive resources, and the elaboration of local territorial groups (villages or hamlet clusters) that defend the assertion of these property rights. Beyond the local group, extensive regional ties are established for marriage, exchange, and security but especially for alliance in warfare. The network of interaction, although not politically centralized, can be organized by intense ceremonial interaction into regional collectivities.

Ceremonies and associated display objects as among the Tsembaga

functioned at two levels (Rappaport 1967). First, within the local group, participation in ceremonies defines membership in corporate groups and establishes personal rights of access. Local groups are often closely identified with a tract of land, an origin myth specifies the place where the group's ancestors sprang from the earth, and the territory is the living home of ancestral spirits. The local group is identified ceremonially by special regalia that emphasize the group's separation, as signaled by distinctive cultural patterns. Archaeologically, the development of local groups can be seen in the regionalization of styles in domestic artifacts such as service vessels and projectile points. Conkey (1978) identifies the Upper Paleolithic with an "explosion" in symbolic behavior as local styles in art and technology proliferate, and Gilman (1984) explains this stylistic elaboration as the exclusion of outsiders from resources. The formulation of the local group creates a corporate structure, and symbolic systems help specify rights within that structure.

Second, within the region, ceremonies define relationships among local groups. As discussed in [Chapter 2](#), these highly visible ceremonies are used to advertise the power of local groups and their desirability as allies and peril as enemies. At ceremonial occasions when neighboring local groups are invited to participate, people adorn themselves elaborately as with local and rare feather and fur headdresses, shells from distant parts, and body paints. Elaborate gifts of valuables are formally presented. To some degree, uniformity in items of display and exchange can be expected both because of trade in valuables, such as in the New Guinea exchange of shell, and because of the necessity for intersubjective measures of prestige (Munn 1983; Strathern 1971). Braun and Plog (1982) have described the regional integration of ceramic styles in the American Southwest and Midwest as representing such broad patterns of ceremonial integration. Although the use of ceramics as part of this display function seems somewhat inappropriate, the increasing development of "regional collectivities" with agricultural intensification is plausible. Politically, local group dynamics provide vivid examples of network strategies of alliances materialized with prestige-goods exchanges that are grafted on local corporate strategies of exclusiveness.

With the initial evolution of social stratification and chiefdoms, new uses of symbolism and style categories develop. The regional organization of chiefdoms has led some researchers to suggest that style will become uniform to the limits of the polity (Redman 1978: 205-206; Watson and LeBlanc 1973). As I argue, the extension in the uniformity of regional style, while undoubtedly real, has been misunderstood and requires a rethinking of the function of style in chiefdoms.

At the local level within chiefdoms, considerable stylistic variability may

continue between communities in clothing and display items. Essentially the local group continues to operate and to be materialized by local ceremonies. At the regional level, however, iconography and elite styles become important to legitimize or "naturalize" the inherent inequality of chiefdoms. Specific materials, objects, and symbols serve to materialize the ruling elites' identity with supernatural forces. In her innovative analysis of Panamanian chiefdoms, Helms (1979) describes how the local chiefs established long-distance trade relationships with the chiefdoms of Colombia. She argues that control of esoteric knowledge embodied in the objects exchanged across great distances sanctified the stratification of chiefdoms. The extensive interchiefdom trade and shared political ideology thus serve to deliver rare and foreign objects linked symbolically to universal forces. Prestige goods obtained by chiefs through exchange then provide a new opportunity for control (Friedman and Rowlands 1977). Exciting work on the function of style in stratified societies includes the recent analyses of Randsborg (1982), Kristiansen (1984, 1987), and Bradley (1984) for European chiefdoms; Upham et al. (1981) and Hantman and Plog (1982) for the American Southwest; and Pollock (1983) and Wright (1984) for the complex chiefdoms of Mesopotamia. The Danish case fits comfortably within this model ([Chapter 12](#)).

In chiefdoms, and increasingly in states, it is possible to speak of ideology ([Chapter 14](#)). Using Yengoyan's (1985: 332) definition, the basis of ideology is "the ability of a group of individuals to utilize cultural symbols for *certain willfully designed ends*" In other words, material goods and their associated symbols are used not to represent relationships but to mask relationships of inequality and domination as part of a religiously sanctioned worldview.

True states extend and solidify the organization of regional populations numbering into the hundreds of thousands and more. Especially important is the development of administrative bureaucracies and other special religious and military institutions. Local styles continue to define community membership with implied rights of land use; for example, distinctive community and ethnic dress is characteristic of closed corporate peasant communities. In fact the state may become covertly involved in emphasizing ethnic distinctions among commoners as a way to define a peasantry divided by tradition and in competition for stately favor (Earle 1997). States also become involved in the semi-industrial manufacture of special goods with uniform styles that function both as status markers and as means of payment.

As argued in [Chapters 3 and 8](#), the controlled manufacture and distribution of politically significant and inalienable objects can be integral to state finance. This transformation is clearly visible in Peru ([Chapter 11](#)). From the pre-Inka to the Inka period, objects used to differentiate elite status among the local Wanka ethnic group changed dramatically. In the pre-Inka period,

characterized by competing chiefdoms, elite status was marked by special ceramics and metals produced and distributed within the valley and by long-distance wealth objects, including ocean shells and pottery. In the Inka period, the exclusive items marking elite status were ceramics, cloth, and metals for which production and distribution could be controlled selectively by the state (for example, [Chapter 9](#)). A person's position locally, therefore, became dependent on a symbolic system without local referent and outside of direct local access. Inka ceramics were involved in special state-sponsored ceremonies of generosity, and they appear to have been produced locally under direct state supervision.

After this cursory overview of ideology and style in cultural evolution, I consider the active use of style as tied to the political economies of complex chiefdoms. Complex chiefdoms (Earle 1978; Steponaitis 1978; Wright 1984; Johnson and Earle 2000) retain many characteristics of chiefdoms but anticipate features of states. Strikingly new is an elite social class, carefully distinguished from commoners in rules of dress, marriage, and the like. Typically complex chiefdoms rely on corporate strategies; the aristocratic group owns all productive resources, which are allocated to commoners in return for labor and specific goods ([Chapter 5](#)). Complex chiefdoms are often called "theocracies," although this label overemphasizes the religious (rather than generalized) nature of their organization (Webster 1976).

Archaeological evidence of complex chiefdoms includes the following:

1. A settlement hierarchy with centers containing public space and often monumental architecture (Wright 1984);
2. Elite social statuses, distinguished by the concentration of special "wealth" objects in burials (Peebles and Kus 1977) and/or by high labor investment in architecture (Arnold and Ford 1980; McGuire 1983); and
3. As discussed here, an interpolity symbolic system that delineates the ruling elites as divine, combining both religious and secular leadership.

In complex chiefdoms, iconography and associated style discriminate the ruling elite and mark them as a people apart. The iconography associates them with universal powers, not tied only to particular geographical locations. Helms (1979) believes that control of esoteric (foreign) knowledge identifies elites with these universal forces. Trade in special objects associated with esoteric knowledge created broad commonalities in elite iconography, cross-cutting chiefdoms within a broad area. Brown (1976), for example, has argued that the Southern Cult was a widespread symbolic representation of social eliteness, military power, and religious sanctity that united the Mississippian chiefdoms of the Southeast.

Here I investigate the use of iconography in the complex chiefdoms of I lavvai 'i and the Mesoamerican Olmec. On the basis of earlier discussions, I move on to address the question of why broadly similar styles, frequently referred to as "cults" because of their religious iconography, can be so widespread? To preview the answer to this question, I will argue that the use of religious iconography to empower and sanctify political domination is a general characteristic of complex chiefdoms. As discussed in [Chapters 6 and 14](#), control over this iconography rests in its materiality, the production of which is costly and controllable.

Elite styles were created by the ruling aristocracy of the Hawaiian Islands to identify themselves as gods. The lesson was unmistakable—chiefs are divine and their rule is part of a natural order in the universe. In some ways, the complex Hawaiian chiefdoms seem almost to have been small states (Hommon 1976). Kamakau (1961) listed three kinds of gods: the local (or low) gods, the high gods, and the chiefs. The chief, according to his/her genealogical rank, was thought to hold or be characterized by considerable religious power (*mana*) and sanctity (*kapu*). The highest-ranked chiefs held a level of sanctity called *kapu moe* that "demanded full prostration from subordinates below a prescribed rank in the presence of the Source or any intimate object belonging to him" (Goldman 1970: 217). The power associated with the chiefs (*kapu*) was greatly feared by those without sanctity (the commoners) and violators of the (*moe*) prescription were supposedly killed.

The world of the Hawaiian chiefdoms was rigidly dichotomized: elite vs. commoner, sacred vs. profane, leader vs. led, and owner vs. tiller. The material, structural, and ideological division was clearly visible in stylistic elements that proclaim participation in the social system. To consider style in the Hawaiian chiefdoms, I briefly sketch the pattern among two classes of goods—the goods of everyday life used by households and the prestige goods used to demarcate chiefly status.

The household inventory of commoners contained a wide range of implements and dress as described fully by Buck (1957). Items include bark cloth (*tapa*) used for clothing, beaters for preparing the *tapa*, boards and pounders for the taro into the main food (*poi*), and an assortment of storage and serving vessels of gourd and wood. In comparison to simpler chiefdoms such as the Maori and Marquesas, these household objects were comparatively simple and unelaborated stylistically. Form appears to follow function, with some local variation in *tapa* decoration, pounders, and adze form. Although a systematic study of these collections is needed, an active use of style among Hawaiian commoners was apparently fairly unelaborated.

In contrast, the prestige goods that denoted chiefly status were highly elaborated, including distinctive clothing and adornment corresponding to

rank. The articles of dress included the feathered cloak and helmet, neck pendants of carved whale teeth, and other ornamentation discussed in [Chapter 6](#) (Malo 1951 [1898]: 76-77; Brigham 1899, 1903, 1918; Buck 1944, 1957: 215-250; Kaeppler 1970, 1978, 1982; Cummins 1984; Chapter 3). The helmets, unique in style to the Hawaiian Islands, consisted of a rigid woven frame onto which was attached a fine netting covered with brilliant yellow, red, black, and green feathers. The style, associated with the high chiefs, comprised a full skull-covering from forehead to neck and around the ears. Starting perhaps two centimeters in at the forehead a medial crest arched over the helmet; this crest, often projecting forward, is highest in the front and lowers toward the neck ([Fig. 7.1](#)). The feathers were applied in broad bands that emphasized the crest.

Virtually all cloaks are crescent-shaped, although they vary in length (shoulder-length to full-length) and in the feather type. Feathers are yellow, red, and black, and the designs are most commonly contrasting crescent-shaped figures (red on yellow background or yellow on red background). Often one large crescent is centered on the wearer's back and two others cross the wearer's front when the cloak is drawn together. The finest cloaks were full-length and brilliant yellow with contrasting red designs. As discussed in [Chapter 6](#), the cloaks were crafted by attached specialists, using a profusion of rare bird feathers carefully collected by the chiefs at regular ceremonies (Kaeppler 1970).



FIGURE 7.1 Hawaiian chief with feather helmet and cloak signifying social status and divine nature, (drawing by John Webber, who accompanied Captain Cook on his third voyage; King 1784)

The basic style of these objects was remarkably invariable across the Hawaiian chiefdoms. Thus the basic uniform, including helmet and cloak covered with the brilliant feathers, was found from Kaua'i to Hawai'i. The symbolism of dress, as I shall discuss in a moment, was essentially the same, although variation from island to island may have indicated local manufacture. For example, the helmets of Kaua'i had broader and lower crests than those from Hawai'i (Kaepler 1978: 67). Most differences among the helmets and cloaks were, however, less related to individual polities than to chiefly status that cross-cut the island chiefdoms. The largest cloaks of the very

rare yellow *mamo* were said to be worn only by the paramount chiefs (Malo 1951 [1898]: 77), and the smaller cloaks made of more common feathers were worn by lesser chiefs (King 1784: 136-137).

The symbolic tie between the dress of the high chiefs and the gods seems to be quite explicit and easily documented. Elsewhere in Polynesia, as in the Hawaiian Islands, feathers form the clothes of the gods. For example, in the chiefdoms of Tahiti, Henry describes how the highest-ranked chiefs "as descendants of the highest class of gods were alone entitled to wear the '*ura*' feather girdle, which was supposed to be the costume of the gods" (1928: 229). Among the Hawaiian chiefdoms, gods were frequently represented as wicker bodies overlain with brilliant feathers. At least eight examples of these feathered gods were collected during Cook's discovery voyage (Kaeppler 1978: Figs. 55-58). When Cook first arrived at Hawai'i, the paramount chief, Kalani'opu'u, and his high chiefs in full feathered dress came out in a dramatic ceremonial greeting (Fig. 7.2):

In the first canoe was Terreeoboo [Kalani'opu'u] and his chiefs, dressed in feathered cloaks and helmets, and armed with spears and daggers; in the second, came the venerable Kaoo, the chief of the priests, and his brethren, with their idols displayed on red cloth. These idols were busts of a gigantic size, made of wicker work, and curiously covered with small feathers of various colors, wrought in the same manner with their cloaks. [King 1784: 16-17]

The feathered helmets of the high chiefs are also seen characteristically represented on god images of both wood and feathers. Figure 7.3 shows a feathered image with a projecting crest identical to the helmets. Kaeppler (1982: Figs 8, 9, 11-16, 19) illustrates ten wooden images with this same overarching crest, which she argues is an extension of the vertebral column symbolizing the genealogical linkage binding living chiefs to their godly ancestors.

The symbolism of the cloaks identifies the chiefs who wear them with the gods. The cloak's name '*ahu'ula*' means literally "red garment," red being the chiefly color of Polynesia and frequently linked symbolically with the gods (Buck 1944: 9). Red feathers were used in the cloaks, sometimes as background but more commonly as the design motif on the rarer yellow feathers. The cloak was worn to encircle the sacred (*tapu*) back of a chief. The primary motif on the cloaks was the crescent that arches over the chief's back as a rainbow. In mythic histories, a god's presence is shown by the overarching rainbow (Cummins 1984). Cummins explicitly ties the rainbow symbolism to *pio*, the marriage between brother and sister of the ruling line, which is the ultimate source of all *mana* (sacred power) of the ruling chiefs. The use of the rainbow symbol on the cloaks associated the wearer with the ruling senior lines and their direct claim to sacredness and godhead. The wearer as a god held obvious rights of control, natural to the social and religious order. His position was

inviolate except in competition with other chiefs, themselves living gods.

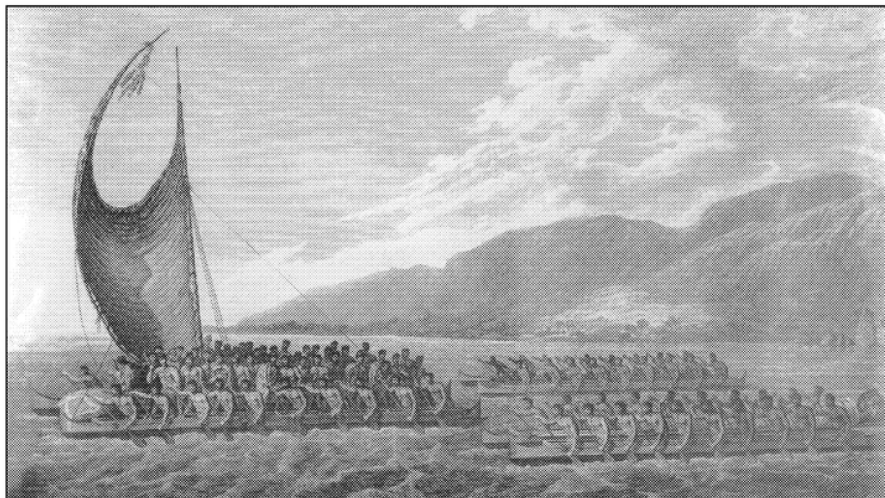


FIGURE 7.2 Kalani'opu'u, paramount chief of Hawai'i, as he ventures out in full regalia to meet Captain James Cook. (after a drawing by John Webber; King 1784)

What we see in the Hawaiian chiefdoms is a remarkably uniform style in a very special set of adornments. These objects of adornment shared a uniform ideology across a number of competing chiefdoms that were linked by alliance and marriage across the top and mutually reinforced by the symbolism and associated ritual.

As argued in [Chapter 6](#), the ruling lines of the Hawaiian Islands controlled the manufacture and distribution of the cloaks. By delivering a cloak unto a lower chief, the paramount recognized the chief's sanctity and affirmed his economic rights within the political hierarchy that he led. In an illiterate, stateless society, the giving, receiving, and wearing of the cloaks demonstrated the social and religious linkages among the chiefly elites and demonstrated what amounted to the contractual rights within the political and economic system. These objects were inalienable possessions, bestowed by a paramount chief to materialize a person's status within the social hierarchy. They could not be given or bought; they were inseparable from the social relationships that they represented ([Chapter 6](#)).

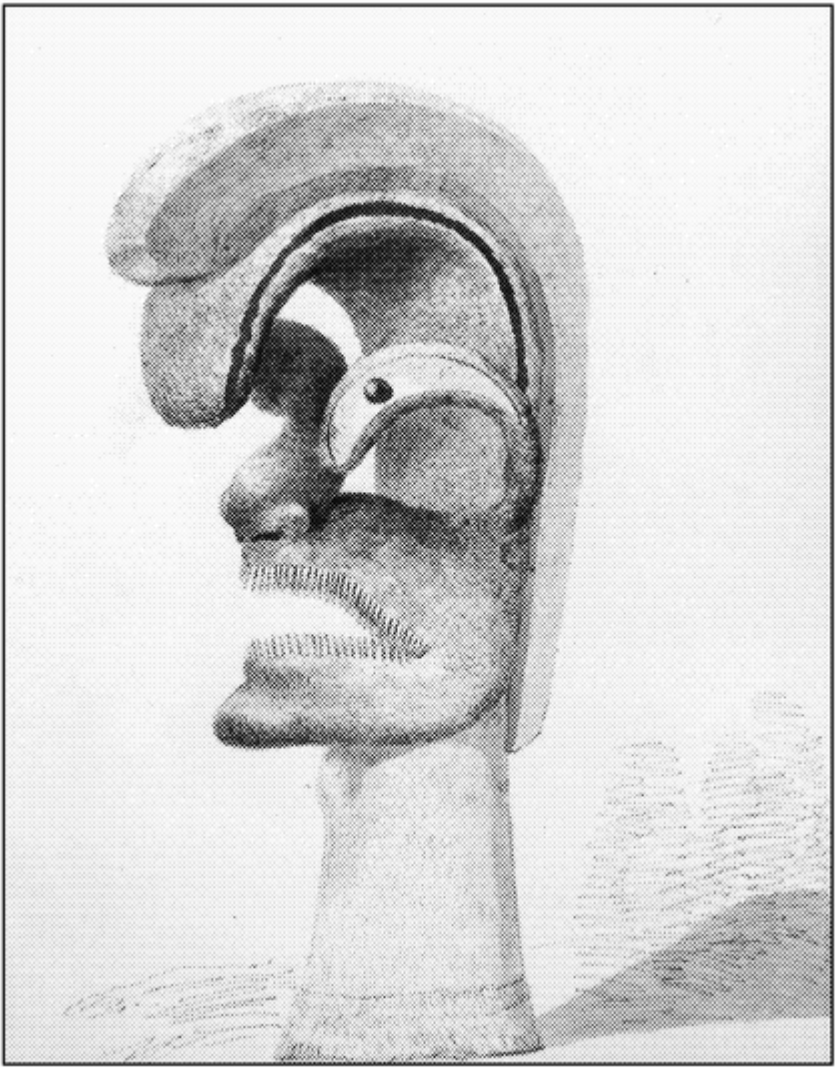


FIGURE 7.3 Feather-covered wicker god from the Hawaiian Islands, (*after a drawing by John Webber; King 1784*)

What I try now to demonstrate is that the use of such critical symbolism embodied in inalienable objects probably characterized as well the social relationships that originally organized the complex chiefdoms of the prehistoric Olmec culture. I argue that their use of an elite style across a broad geographical area probably embodied a similar ideological underpinning.

The Olmec culture was a small group of complex chiefdoms located along the tropical Gulf coast of modern Mexico. The subsistence economy apparently combined shifting and permanent cultivation; Coe (1974) has argued ingeniously that chiefly control (ownership) of natural levee soils, suitable for permanent cultivation, underlay Olmec political development.

The Olmec culture is seen by many as Mesoamerica's first civilization and the foundation for later developments (Willey 1962). The Olmec was a complex, regionally organized society (Heizer 1960; Drucker 1981). The largest centers such as La Venta contain both massive stone sculptures and mound constructions, which together represented large labor investments and corporate strategies of political control. Built on an island surrounded by marsh, La Venta consists of a carefully planned complex with a large central mound (30 m tall), flanking mounds, plazas, ceremonial courts fenced with basaltic columns, and the large Olmec heads. The planned layout of La Venta along a clear central axis (8° west of north) suggests a symbolic ordering of spatial relationships in the ceremonies that must have taken place on this monumental stage. Such axial arrangements typify many chiefly centers and have been interpreted as a way to orient and tie their ceremonies to broad cosmological processes ([Chapter 3](#)).

Heizer (1960) estimated that La Venta contained over a million labor days in construction which would have required mobilizing and supporting labor from a support area surrounding the center. Drucker (1981) summarizes the ample evidence for non-food-producing specialists who planned the centers, organized large labor crews, and manufactured large sculptures and wealth objects. These are the attached specialists who typically work for chiefs ([Chapter 6](#)). Evidence for social stratification with a ruling elite is evident in the burial ritual and the iconography.

How can we characterize the Olmec culture? Sanders and Price (1968: 127-128) and I (Earle 1976) argue that the Olmec were organized as chiefdoms. Conversely, Heizer (1960) and Drucker (1981) argue for a simple state, with strong "theocratic" overtones. Although it is evident that the Olmec culture represents a form significantly more complex than simple chiefdoms (such as Drucker and Heizer were familiar with in North America), it is also evident that Olmec culture lacked characteristic institutional elaboration (such as bureaucracies) that typifies states. Social stratification and the highly generalized nature of the elites as both sacred and secular leaders make the Olmec case a particularly good example of complex chiefdoms, or what has been called "theocratic states."

As imposing as the spectacular Gulf coast development is, the broad spread of Olmec "influence" throughout much of Mesoamerica is equally impressive. Sites located in Morelos (Chalcatzingo, Gualupita, Atlahuacan), Puebla (Las Bocas), the Basin of Mexico (Tlatilco, Tlapacayan), and even into Guerrero, Oaxaca, and coastal Guatemala contain portable objects and occasionally stone sculpture in Olmec style. Willey (1962) sees the Olmec as Mesoamerica's first "great style" defining a horizon across the culture area. The Olmec style certainly contained the symbols of a religious ideology that linked up much of

Mesoamerica and can be seen as a foundation for the later developments.

But how can we explain this impressive spread of Olmec style? Three suggestions have been made.

(1) The Olmec culture may have been spread by military conquest. Certain impressive sites, such as Chalcatzingo in Morelos, have been interpreted as Olmec colonies (for example, Bensen 1968). On the basis of iconography (Drucker 1981), although warrior motifs are common, the clothing and paraphernalia of the defeated, subjugated people are Olmec, not foreign. The warrior theme thus fits better a picture of intense interchiefdom rivalry within the Olmec heartland such as characterizes the political dynamics of chiefdoms and the available Olmec settlement pattern data (Earle 1976). No evidence exists for a far-flung Olmec administrative system with roads and special military facilities. The Olmec elements away from the Gulf coast are selective (some monumental sculpture and personal items of status display), indicative of shared ideologies but not the displacement of highland people by lowland conquerors (Flannery 1968). Most such Olmec items in the highlands, for example, show definite evidence of local manufacture and interpretation (Grove 1984).

(2) The Olmec style may represent a religious cult that spread by proselytizing through Mesoamerica from its origins in the Gulf coast region. Certainly this explanation fits better the selective nature of shared style in elements of "religious" iconography. As Sanders and Price (1968: 120) pointed out, however, the idea of Olmec missionary groups spreading a cult is improbable because analogous situations of cults in the Old World do not appear until late into the Iron Age when states and mercantile trade unified large areas throughout Europe, the Middle East, and Africa. The religious aspects of the Olmec are apparent, but the nature of their spread and adoption would appear best explained by a third suggestion.

(3) In an influential paper, Flannery (1968) argued against either conquest or missionization. Instead he saw the local evolution of stratified societies, that is, chiefdoms, and their linking up through elaborate systems of exchange, alliance, and intermarriage. Some have interpreted the most important lesson from Flannery as being that long-distance exchange and symbiosis were ultimately at the base of the ideological bonding; however, long-distance trade and ideological interrelation are in my estimation best seen as an outcome of an ultimately more interesting phenomenon of ceremonial legitimation and its control through material representation.

At this point, I would like to step back a moment to review what we know as the character and distribution of the Olmec style in Mesoamerica. In the Gulf coast heartland (Fig. 7.4), representations of figures that combine human and feline elements are common. These figures are found as massive heads,

semi-relief carvings, jade celts, serpentine mosaics, and decoration on special serving vessels (bowls, dishes, and bottles). In his article "Olmec jaguars and Olmec kings," Coe (1972) argues that the Olmec iconography was associated with a royal cult that functioned to sanctify the ruling Olmec elites. Certainly the emphasis in the Olmec monumental art is on human and anthropomorphic forms (Fuente 1981). Much of the art may have been portraits of ruling chiefs (Grove 1981: 61). Individuals are represented with composite elements indicating a duality most probably associating the individuals with a divine source. Coe describes the direct tie between a naturalistic ruler and a feline in the Olmec wall paintings from Guerrero as making explicit the divinity, or at least the divine connection, of Olmec rulers. Working from an Aztec analogy, Coe concludes, "By means of a long-series of structural oppositions, the divine nature of the royal line and its total separation from (and superiority to) the common people are stated in vivid terms" (1972: 9). The Olmec ruler and, by extension, all Olmec lords were thus presented as gods in ways closely analogous to the Hawaiian case.

What is at first puzzling and then becomes clear is the reason for the spread of Olmec iconography across Mesoamerica. Although motifs and general stylistic rendering were quite broadly shared across much of Mesoamerica, the actual pattern of distribution was spotty and realized in quite different contexts from place to place. At a few sites such as Chalcatzingo in the highlands of Morelos ([Fig. 7.4](#)), the Olmec style was elaborated and linked to the distant Gulf coast heartland (Grove 1984; Guillen 1984; cf. Flannery 1968). The stylistic link is evident especially in the famous bas-relief stone carvings, elite burials with jade and greenstone wealth objects, and portraiture figurines probably representing rulers or their deified ancestors (Grove 1984: 49-68, 73-75, 87-88). The stone carving is close to the lowland prototypes, suggesting to Grove that stone-carvers from the Gulf coast may actually have come in to do the work. Who could these carvers have been? We know that highly skilled craftsmen often moved across political boundaries, as when Chinese craftsmen came to Japan (Barnes 1987). Similar crafters may well have originally brought metallurgical traditions to northern Europe ([Chapter 12](#)). As foreigners, such crafters would have had strictly limited movement; they were likely closely attached to local elites who may well have encouraged their immigration.

The elite burials in crypts follow an Olmec model. The two richest interments are on the main platform mound at Chalcatzingo; one individual wore

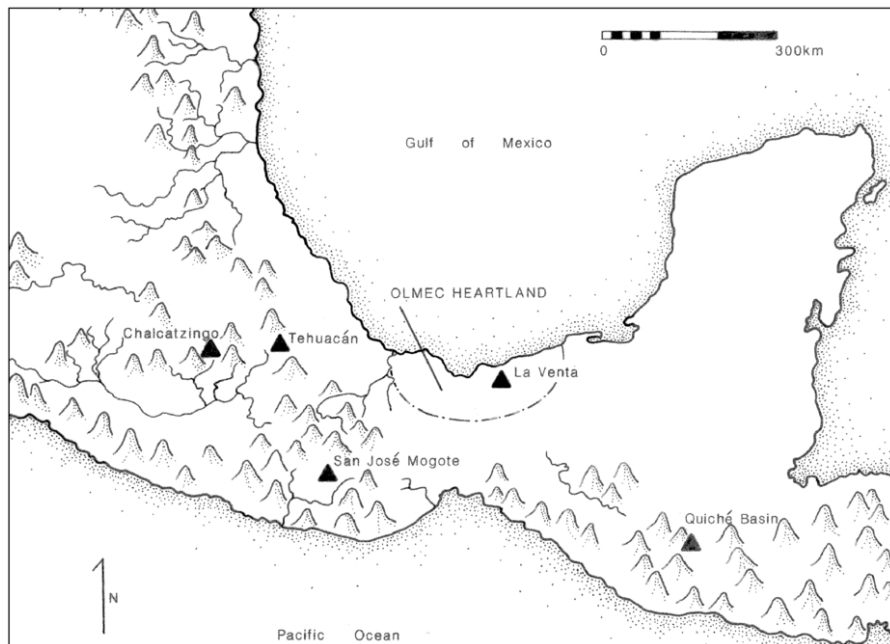


FIGURE 7.4 Map of Mesoamerica, showing the Olmec-period sites discussed in the text.

jade earspools, necklace, and a pelvic bead string, and the other had jade earspools, a turquoise mosaic, and hematite mirror. These objects were used in similar burial contexts in the Gulf coast region. Most of the archaeological assemblage from Chalcatzingo, however, is quite clearly of a local highland tradition (Grove 1984; Flannery 1968). Even the "Olmec" pieces are of local manufacture and show strong indications of local interpretation.

Chalcatzingo was not an Olmec site, but Olmec iconography was used selectively, associated with public, ceremonial space and with elite burials. In an interesting analysis of a bas-relief sculpture with a female representation, Guillen (1984) suggests that elite marriage alliances existed between Chalcatzingo and the Gulf coast Olmec. The marriage would give the lowland Olmec access to the highland raw materials and the highlanders connection to the sacred kin lines of the Olmec.

In the region of Oaxaca, the use of Olmec iconography was more limited, including the directional orientation of civic-ceremonial architecture at San Jose Mogote and the use of Olmec-style motifs (especially the "were-jaguar" and "fire-serpent") on special ceramic vessels. Pyne (1976) has shown that these Olmec motifs, with special ritual or cognitive significance, are *not* found associated with public architecture in Oaxaca but are found in residential contexts, especially in the houses of elites, identified by differential access to long-distance trade goods (spondylus, pearl oyster, mica, and magnetite). Interestingly, different houses and associated house clusters vary in the specific

motif that is most common, suggesting that separate social lines were identified with different divine motifs.

In other regions, such as the Tehuacan Valley of Puebla (Drennan and Nowack 1984), the Quiché basin of Guatemala (Brown 1984), and the eastern lowlands of the Peten (Blanton et al. 1981), no use of Olmec iconography has been recognized despite considerable archaeological work. In terms of distance, these areas are as close (or closer) to the Olmec heartland as other areas with definite Olmec connections.

The differential use of Olmec iconography outside of the Gulf coast region would appear to reflect the different levels of social complexity in these regions. Where chiefdoms had already developed, the Olmec style was adopted and represented materially by attached specialists so as to meet existing political needs for legitimation of the stratified and politically centralized organization (Drennan 1976; Blanton et al. 1981). In fact, the probable difference in complexity between the chiefdoms of Morelos and Oaxaca may be seen as determining quite different patterning of use of the Olmec style from its more public use at Chalcatzingo. However, regardless of distance from the Gulf coast, areas without Olmec connections were areas without established chiefdoms. Once established, the connections between the elites along the Gulf coast and in the highland areas would have provided important opportunities for control of long-distance trade (Hirth 1978) and the associated esoteric knowledge that sanctified the principles of inequality. These long-distance trade relations would then have served as critical support for continued political power.

I stress that style, as iconography encoding elite ideologies, can be understood to function in broad social processes. Style proclaimed and justified, in the absence of written contracts, individual and group rights of resource access. In nonstratified societies, these rights derived from membership in local groups, which own land based on residence, defense, and ceremonial identification. In such a system, display artifacts, such as dress, should be locally distinct, and all households should share access to them. Through the display of these goods, the group is proclaimed an entity with its members' rights to the estate.

In stratified societies, the unequal access to resources on which the chiefdoms depended was sanctified by the connection of the elites to universal, divine forces external to the local world of commoners. The Olmec rulers or the Hawaiian chief proclaimed connection through a special iconography to divine forces that sanctified their rule and legitimized their rights of control. Thus the Hawaiian feather cloak with its encircling rainbow announced the presence of a god, or at least his representative. The Hawaiian paramounts allocated to their immediate supporters both economic rights in communities

and the cloaks that demonstrated the sanctity of those rights. In the Olmec, the anthropomorphic felines similarly represented the link between rulers and divine powers.

The Olmec stylistic connection between highland chiefdoms and the Gulf coast chiefdoms may have signified social and religious bonds based on marriage and alliance (Flannery 1968). Among the Hawaiian Islands, one island's ruling line (that of Kaua'i) was considered most sacred and all the other ruling lines sought marriages with it. Alternatively, a religious system that defined a connection between chiefs and a universal divine force (symbolized by the feline) could have spread because of its unquestionable utility to local polities outside the Olmec core. Interregional connections were further reinforced by the exchange of special items such as the magnetite mirrors and jade axes that demarcated elite status. The amount of interconnectedness among the regional chiefdoms of Formative Mesoamerica is difficult to assess based on present evidence, but the reason for a broad interregional "great style" seems clear—legitimation of the chiefdoms.

Stylistic patterning, commonly studied by archaeologists, offers ways to investigate political and social processes at the very core of societal dynamics. It seems likely that cross-cultural and cross-time similarities in the specific patterns of stylistic identification and differentiation will be shown to articulate with broad evolutionary patterns in society. To do this, as archaeologists, we must be concerned with the specific uses of style as identified by the contexts of their appearance. This should not, however, concern us with identifying historically specific meaning but lead us to a concern with the functions of style and symbolic representations in human culture.

As the Hawaiian and Olmec cases inform us, style is a formal and an informal way to present meaning. In a society divided by classes and factions, style is actively constructed within the iconographic system. It is used to create and manipulate knowledge and thus to fashion consent as the necessary adjunct to power based on economic control. With this in mind, a processual and materialistic orientation to prehistory should incorporate the functional aspects of style and iconography within its models developed to explain the evolution of social complexity. How such translocal iconographies materialized ideologies of elite domination is also well presented in the prestige-goods exchanges that characterized the networked strategies of European chiefdoms (Chapter 14).

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Part II

Andean Chiefdoms and the Inka Empire

The high Peruvian Andes, home to many chiefdoms and wellspring to the Inka empire, are jagged mountains edging the Pacific Ocean between 5° and 16°S latitude (Fig. II.1). Here the collision between the Pacific and South American tectonic plates forced up one of the earth's most imposing mountain ranges. In a transection of the range from west to east, over an air distance of less than 250 km, the peaks rise steeply above the ocean beaches to towering heights of more than 4,500 m and then fall precipitously to the flat expanses of the forested Amazon. The three large environmental zones of the Andes are the coastal desert, the sierra, and the tropical forest lowlands. Along the Pacific Coast, rain rarely falls on the barren desert. Green valleys cut through the desert, channeling water from the high mountains to the sea; with many irrigation canals, these valleys have become oases for human agriculture and settlement.

Above the coastal desert is the central sierra. As elevation increases, rainfall increases and temperatures decline; snowfall is normal in winter above 4,000 m. The intermontane valleys and surrounding slopes, at 3,000-3,800 m in elevation, provide rich lands for both rainfall and some irrigated and drained-field farming. Above are expansive grasslands used for pasture. Standing above these rolling lands are the glacier-capped peaks of the Andes. East of the mountains, the vegetation rapidly changes again from alpine to tropical, almost falling into the forests of the Amazon Basin. In only a few hours' drive, modern travelers must strip from down parkas to tee shirts.

The regional focus of my research has been the Upper Mantaro Valley, located in the sierra zone (Fig. 11.2). The actual research area is about 1,000 km²,

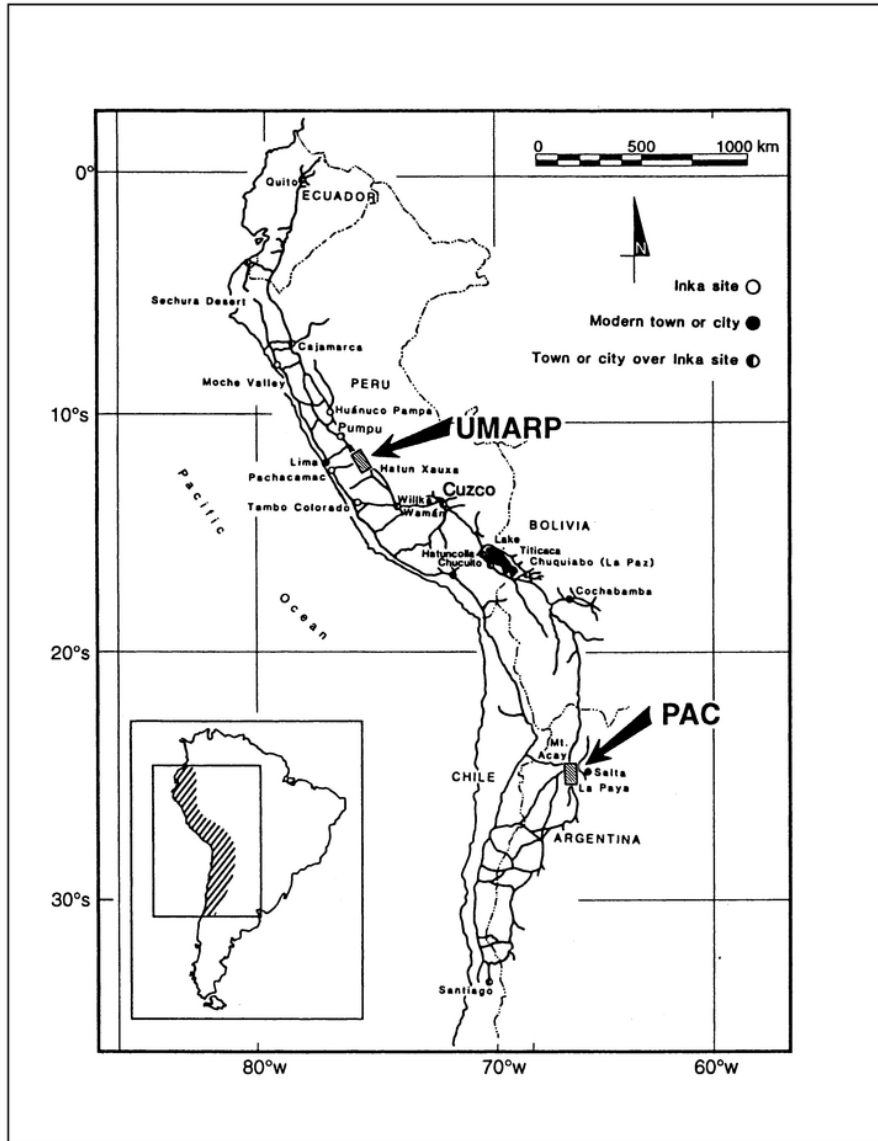


FIGURE II. 1 Map of the Inka empire, showing the road system as reconstructed by Hyslop. (Adapted from *The Inka Road System* by John Hyslop, 1984, Academic Press; reproduced by permission of the publisher.)

originally surveyed by Jeffrey Parsons (Matos and Parsons 1979). The Mantaro typifies the environment of the high Peruvian Andes. The valley at Jauja is 3,400 m above sea level. On the valley bottoms, people farm with irrigation where possible and have extensive dryland fields elsewhere. Many are also miners who dig and refine the mountains' rich copper ore and other metals or work in the towns. Jauja itself is a small city of about 30,000; since colonial times, it has been a political and market center for the northern half of the

valley. Other smaller towns and villages are scattered through the region, close to their agricultural fields. The annual rainfall is approximately 600 mm at Jauja, falling seasonally mainly in the summer (November to March). Droughts are a periodic problem. It is chilly here, with a mean temperature of approximately 12°C (54°F). Although diurnal mean temperature changes little through the year, the range is greater in the dry winter (17°C) than in the wetter summer (13°C)(Hastorf 1993:105). Frost limits the growing season to the summer, and at any time frost can destroy the farmers' crops.

The surrounding rolling hills (3,400-3,800 m) are bare of trees. Small streams and springs provide irrigation water, but most lands are watered by seasonal rains. Farmers anxiously await the spring rains to plant quickly so as to avoid losses inflicted by fall frost and hail. The main crops are cereals and potatoes, for which the region is famous. The small villages, scattered through the uplands, once farmed the land cooperatively. As temperatures decrease with elevation and the growing season shortens, agricultural fields give way to pasture. The native grasslands cover the rolling valleys and hills between 3,800 and 4,300 m, and small flocks of European sheep and New World camelids (llama and alpaca) graze here. The sheep and alpaca produce wool, and llama in caravans still transport potatoes and other produce to remote valleys. Temperature drops below freezing each night, and a cold drizzle is frequent in the summer. Snow can blanket the upper elevations, and permanent glaciers cover the highest mountains.

The Upper Mantaro Valley has a rich record of historical accounts and archaeological research. The primary historical documents include journals of early conquistadors, chronicles by both Spaniards and Inka lords, formal administrative reports, and court cases. The earliest documents include letters from Hernando Pizarro, who marched through Jauja during his conquest of the Inka empire: "The plaza is large and one-quarter league long ... it is true that there were over one hundred thousand souls [in the plaza]. . . . This town of Xauxa is very fine and beautiful" (quoted in D'Altroy 1992: 103). Early administrative documents include two *visita*, investigative reports prepared by governmental officials (Toledo 1940 [1570]; Vega 1965 [1582]). For these reports, the officials asked local leaders about conditions prior to and under Inka domination, and the leaders described the Wanka chiefdoms and their incorporation into the Inka empire.

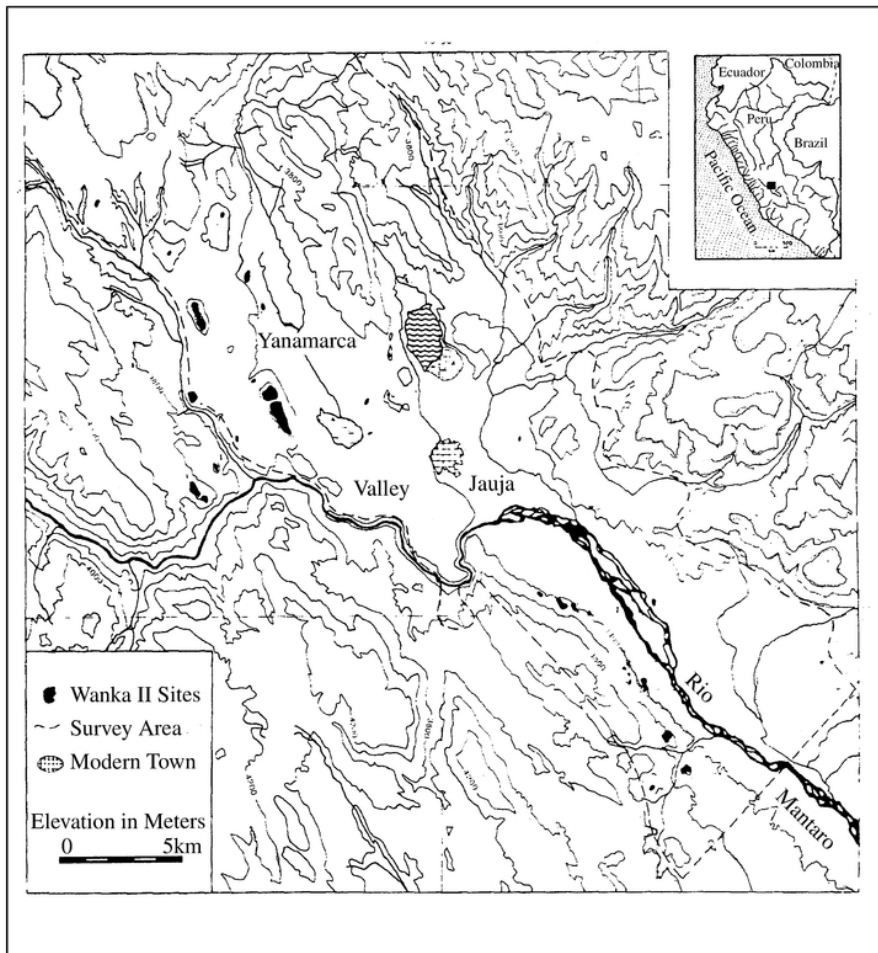


FIGURE II.2 Wanka II settlement pattern for the Upper Mantaro Valley, indicating the surveyed region of UMAP. (D'Altroy 1992)

The Wanka chiefdoms in the Mantaro Valley (A.D. 800-1534), like others in the Andean highlands, were often quite large, but not strongly institutionalized. An individual chiefdom might have 10,000 or more people, organized by their leader, the *cinchecona*:

... before the Inkas there was no lord in this land [the Mantaro] other than that each town and the natives of it were lords of what they had and of their lands. [Toledo 1940 (1570): 22]

... since there were wars among the natives and towns, when there was a valiant man from among them called *cinchecona* meaning "now here is this valiant man," those who could not [defend themselves] took shelter with him ... and thus they obeyed him and had no other form of government. [1940 (1570): 18]

Although the office of *cinchecona* was inherited, holding office was justified by warrior prowess. Each community fought with its neighbors over land, herds, and women. Stratification was little elaborated. Around A.D. 1460, an

Inka army invaded the Mantaro Valley and incorporated it within their expanding empire (D'Altroy 1992: 79-81). The chiefly organization of the Wanka continued, but became a provincial authority of the Inka empire.

The Upper Mantaro Valley is archaeologically the most fully documented region in the Peruvian central highlands. Following good basic work in the 1950s and 1960s, Jeffrey Parsons and Ramiro Matos (Matos and Parsons 1979; Parsons and Hastings 1988; Parsons and Matos 1978) directed a comprehensive settlement survey of the Valley. Then from 1977 to 1988, Cathy Scott, Terry D'Altroy, Chris Hastorf, and I directed eight seasons of the Upper Mantaro Archaeological Research Project (UMARP) (Earle et al. 1980, 1987; Hastorf et al. 1989). Sites chosen for study concentrated on the 200 years prior to Spanish conquest (A.D. 1300-1534) and to a more limited extent the previous 800 years (A.D. 500-1300). Sites excavated ranged from the large, late centers to small hamlets with only a few households. From this extensive research, considerable archaeological evidence is now available on environmental change, population, subsistence, craft technology, social and political organization, and culture of the Wanka.

Prior to extensive human occupation and alterations to the environment, the Upper Mantaro Valley was apparently forested. The vegetation zone was part of the extensive dry, savanna forest that covered much of the middle elevations in the central Andes (Tosi 1960: 11). It was an open, mixed forest with deer and other game. At higher elevations, on the hills above the valley, the forest would have given way to open grassland *puna*, grazing lands for wild camelids, ancestral to the llama and alpaca. After A.D. 200 human settlement dramatically transformed the valley. Now nearly treeless, the open landscape was intensively cultivated—broad fields in the valleys and on the rolling uplands, smaller terraced fields on the hill slopes and hill ridges. Except for farmyards and villages, almost every square meter of land below 3,600 m was cultivated. At higher elevations, fields were fallowed and weed-grass vegetation was interspersed among the crops. Above 3,800 m the land was primarily grassland, impacted by animal herding and now abandoned farms (Matos 1975).

In prehistory, climate change profoundly affected the human economy. Herbert Wright and Geoffrey Seltzer (Seltzer and Hastorf 1990) conducted a study of long-term environmental change by mapping and dating the terminal moraines of the Nevada Huaytapallana ice pack. Following a glacial advance that peaked around A.D. 250, the glacier again retreated during a warming period when temperatures reached modern levels by roughly A.D. 600, the period when our main sequence begins. Then, roughly A.D. 1200 to 1500, during Wanka II and III, regional temperature declined about 0.6°C, as the local glaciers advanced. Such a cooling would have depressed vegetation

communities by approximately 70 m in elevation. Already at the margins of agriculture, the lowering of life zones would have increased the risk of crop failure due to frost and decreased substantially the total area available for agriculture (Hastorf 1993: 106-108).

Early hunters first settled the valley margins and adopted animal herding sometime prior to 1000 B.C. (Browman 1970). For the lengthy Formative Period (1000-0 B.C.), when agriculture was first introduced, population density remained quite low, no more than a few hundred people, probably limited by the availability of crops suited to high elevations. During the Early Intermediate Period (roughly 300 B.C. to A.D. 800), population increased to perhaps 14,000, distributed broadly in villages and smaller hamlets.

Following the imperial expansion of the Wari, an Andean state that originated to the south in Ayacucho Province, the Early Intermediate Period cultural tradition in the Mantaro was replaced by the new technology and style called the Wanka. During Wanka I (A.D. 800-1300), population appears to have remained little changed at perhaps 14,000. Wanka society was a world of competing chiefdoms, based on intense warfare and local warrior leaders (Hastorf 1993). Populations were concentrated in hill fort settlements "defending the heights" (Hastorf 1990). The largest settlement was 8.2 ha, suggesting a population of perhaps 800. Rubble mounds are common on sites, and fragmentary structures of round stone houses were arranged in patio groups (Hastorf et al. 1989; Hastorf 1993). At least some were fortified by encompassing walls. The larger settlements were fairly regularly spaced through the valley and may well have been the central places for small chiefdoms. An individual chiefly polity would have contained three to five settlements spread across a small territory with a population of one to two thousand. These statistics are characteristic of many small-scale agricultural chiefdoms around the world.

During Wanka II (A.D. 1300-1460), population climbed, and the size of settlements and their internal density increased dramatically. Population peaked at 61,000 (D'Altroy 1992: 60). Counterintuitively, the dramatic population increase took place despite the declining productive potential resulting from the climatic cooling (Hastorf 1993). The decrease in productivity, coupled to the increasing population and population aggregation, would have placed the subsistence economy under severe stress. Settlements shifting to higher, more defensive locations created additional problems as distances to productive fields on the valley floor increased.

The scale and complexity of the chiefly polity increased dramatically. Within the research area, three chiefdoms have been identified centered on the large settlements of Tunanmarca (J7; 24 ha), Llamap Shillón (J190; 31 ha), and Hatunmarca (J2; 74 ha). These are impressive sites, located on high ridges just

north of the main Mantaro Valley. Many people lived in these settlements (10,600, 5,800, and 8,800, respectively), crowded within their sturdy fortification walls (D'Altroy 1992: 56-57; Earle et al. 1987: 10-11). A number of smaller settlements were located nearby to each main center, and the styles of ceramics were distinct between these groupings (LeBlanc 1981). Analysis of the sites' artifact assemblages documents that the centers and their associated settlements represented an economical unit linked by craft specialization and exchange in some lithics and ceramics (Costin 1986; Russell 1988).

As an example of the Wanka chiefdoms, Tunanmarca was an impressive polity in the northern Yanamarca Valley. It was dominated by the town-sized center, located for defense high (elevation 3,850-3,900 m) upon a limestone ridge that overlooks the agricultural Yanamarca Valley. Architectural preservation is excellent and many of the prehistoric structures have standing stone walls up to 2 m high. We have mapped the basic layout of the settlement from aerial photographs and identified an estimated 3,800 residential structures within the 24-ha residential area. Houses were arranged around walled patio areas that appear to have been private spaces for individual households. A network of irregular pathways connected the patio groups, and the center of the site was dominated by a double plaza. The Tunanmarca polity incorporated seven additional settlements with an estimated total population of 24,000 (44 percent lived within the main center's walls).

The houses of chiefs and commoners were similar in style, but clearly differentiated (DeMarrais 2001). Typically commoner households like 7=9 (see [Chapter 11](#)) had a single structure and small patio areas. Architecture was simpler in terms of labor investment and finishing of the stonework, and their location was more peripheral in the settlement. In contrast, elite households had a larger patio group. Household group 7=2 at Tunanmarca contained six structures, all believed to be residential based on the uniform pattern of hearths, domestic artifacts, and subfloor burials. The several structures in the elite compounds could have housed the extended family of the chief, attached specialists, or several wives of the Wanka leader. The architecture had some fine details and careful finishing with stone shaping and chinking. These special patios were found high on the ridge, typically in central locations of their settlements. The distinction between elite and commoner housing, however, should not be overdrawn. The differences were of degree, not kind. All people lived in similar housing, differing only in size and finish.

Differences in architecture, everyday goods, and grave objects were not strongly marked between leaders and followers. Although prestige goods, such as metals and elaborate ceramics, were statistically concentrated in the elite residences, they were not restricted to these contexts. Although special silver or copper pins (*tupu*) were found almost exclusively in the elite patio groups,

other metals and special ceramics were found more broadly, if in smaller numbers. A Wanka elite was apparently not a distinctive class.

During Wanka III (A.D. 1460-1533), after the Inka conquered the valley, population appears to have leveled off; Wanka population has been estimated at 36,000 and an additional 9,000 Inka (D'Altroy 1992: 194). The basic settlement hierarchy continued, but settlements were smaller and more numerous. The great center of Tunanmarca was abandoned quickly, and the residential area of Hatunmarca shrank in size to 27 ha (with an estimated population of 3,300). Most people now lived below 3,650 m, although some special-purpose pastoral and mining settlements were at higher locations (D'Altroy 1992: Fig. 9.2). The pattern of resettlement was apparently an outcome of pacification.

At least two sociopolitical units appear to have continued the preconquest organization of separate large chiefdoms. The largest Wanka III settlements, the new town Marca (28 ha; 3,300 inhabitants) and Hatunmarca, were similar in size, and their ceramics were distinct, evidently of different systems of manufacture and distribution (Costin 2001; D'Altroy and Bishop 1990). The local styles at Marca continued Tunanmarca patterns, and it may be that Marca was settled by members of the former Tunanmarca chiefdom; Hatunmarca continued to occupy its Wanka II location. The Inka state appears to have ruled the Mantaro through its preexisting political organization of chiefdoms.

Hatunmarca was a chiefly center, like Tunanmarca, during the Wanka II period, and it continued its political position under Inka rule. Hatunmarca was a large settlement, with a long span of occupation history beginning in the Early Intermediate Period. The habitation extended for 2 km along a limestone ridge that edged the Yanamarca Valley on the west (see [Fig. II.2](#)). The settlement covers two broad knolls, separated by a lower saddle. On the top of the southern knoll, stratigraphic excavations revealed earlier occupations, but the full extent of the residential settlement dated to the Wanka II period.

On the southern knoll, a central ceremonial precinct contained open plazas and special buildings (D'Altroy 1992). Although the precinct probably dated from Wanka II times, it had been heavily reconstructed during Inka hegemony. Various buildings were constructed in the Inka imperial style, including a large rectangular building with gable ends and trapezoidal niches. Elite compounds at Hatunmarca concentrated on the ridge just south of the ceremonial precinct. They contained several rectangular Inka-style buildings and large Wanka-style circular buildings. Commoner patio group, in contrast, were smaller, typically containing only one circular building.

A separate settlement system was related to the Inka state administration of the Mantaro. Hatun Xauxa was a large planned state center, located on the main imperial road (D'Altroy 1992). Cieza (1984 [1551]: chap. 84, pp. 242-243)

described a rich temple and palace at Xauxa with 8,000 in service there. Other state constructions in the valley included secondary way stations along the road, a suspension bridge, and thousands of storage structures on the hills above the center and bordering the valley. The Inka invested heavily in the state infrastructure in the Mantaro as a means of economic and political development (D'Altroy 1992).

The archaeology conducted by UMARP focused on reconstructing the prehistoric economy and how it changed with Inka imperial conquest. We had anticipated that the imposition of a regional peace by the empire would have decreased the costs of exchange and greatly increased commodity flows regionally, potentially creating the beginnings of a market economy. We were wrong, but the rich data that we amassed have highlighted another perspective. Local intensification was part of a corporate state strategy to support the remarkable Inka development. To a modest degree, exchange existed between villages prior to imperial pacification, and this exchange continued almost unchanged after conquest; no increase in trade followed pacification. Rather, the driving force for economic change proved to be the requirements of the state political economy to finance state operations. We found that the Inka empire, like the complex chiefdoms of the Hawaiian Islands, depended largely on staple finance. With imperial conquest, the mobilization and central storage of staples increased dramatically. Limits to staple finance were then transcended by expanding wealth finance, involving the controlled production and distribution of tin bronze and other state objects as a political currency. As a result of conquest, household consumption changed selectively when objects of prestige received from the state identified elites symbolically with the overarching Inka hierarchy.

Staple Finance, Wealth Finance, and Storage in the Inka Political Economy

The evolution of complex society is a central issue in recent anthropological thought. Analysts of cultural evolution have adopted various perspectives to understand the relationship between developing political complexity and economic organization. Particularly influential have been the functionalist arguments that seek to explain the development of new institutions, such as centralized leadership and regional political organization, as means to solve problems of production, security, and privileged access to economic resources. Such theories emphasize the way new forms of integration manage problems created by increasing population density and the concomitant intensification of subsistence activities or the way privileged access to necessary resources is maintained in the face of competing claims (Service 1975). Arguments centered on the requirements of information processing (Wright and Johnson 1975; Wright 1977) and the social relations of production (Godelier 1977; Friedman and Rowlands 1977) have also stimulated considerable interest in the recent literature.

An alternative approach focuses on the relationship between the evolution of social complexity and increasing energy capture. This perspective, which underlies the present discussion, is based to a certain extent on principles of cultural evolution worked out by prior researchers. Childe (1951), drawing from eighteenth-century Marxian ideas, argued that the evolution of complex society required technological progress and the production of a food surplus. The surplus was seen as necessary to support social elites, government bureaucrats, craft specialists, and the other non-food-producers who characterize complex societies. In a sweeping general formulation, White (1959) proposed that cultural evolution was based on progressive levels of energy capture and related cultural elaborations. As Steward (1955a) noted, however, the problem is not simply how much energy is available but how that energy is used. In simple terms, an increase in the amount of energy brought into a cultural system can result in either more biomass (more people) or more complex systems. Analyses of the development of social complexity must, therefore, be concerned with how energy is channeled to finance the creation and maintenance of social institutions (Adams 1978; Price 1978, 1982; Harris 1979).

Included among these institutions are regionally integrated government, religion, and social elites (Fried 1967; Service 1975). The development of institutions is predicated on the growth of systems of finance to channel needed resources from local production. Of comparable importance is the establishment of new socioeconomic institutions to develop alternative sources of revenue, such as centralized taxation, tribute, and administered exchange. Sources of finance are essential to the evolution of the sociopolitical and religious institutions that provide the authority and power components of the state.

In this chapter, we consider (1) the reorganization of the economic systems of the state and its subject polities to meet the requirements of the expanding state and (2) the development of new forms of finance, drawing on both staple and wealth products, to meet state needs. Assuming that the state's economic goal is to expand its labor and natural resources, we argue that the key factors affecting the finance organization are the capacity of the subject groups for gross surplus production, a required state investment in political and economic security, and the potential efficiency of production, logistical, and disbursement mechanisms. We focus our discussion on Inka state finance, although the arguments are not necessarily restricted to this case.

Staple Finance and Wealth Finance

For the present discussion, we may dichotomize systems of finance in archaic states into two general types, staple finance and wealth finance, on the basis of the form in which the material support is mobilized.

Staple finance (Polanyi 1968: 321; Earle and D'Altroy 1982: 266) generally involves obligatory payments in kind to the state of subsistence goods such as grains, livestock, and clothing. The staples form accounting units (a bushel of wheat or a head of sheep) that have established values. Staples are collected by the state as a share of commoner produce, as a specified levy, or as produce from land worked with *corvée* labor. This revenue in staples is then used to pay personnel attached to the state and others working for the state on a part-time basis. The obvious advantages of such a finance system are its simplicity and directness in collecting generally available products needed by the households that are involved in state activities rather than solely in subsistence production. The main disadvantage is the cost of bulk storage and transportation. Such goods are typically heavy in relation to their value, and it is inefficient to move them over long distances. For this reason, staple finance is most appropriate for relatively small agrarian states and for empires with

highly dispersed activities that can be supported by regional mobilizations. Staple finance includes systems that have been called redistribution (Polanyi 1957; Dalton 1961; Murra 1980 [1956]), mobilization (Smelser 1959; [Chapter 4](#)), and tax in kind.

Wealth finance involves the manufacture and procurement of special products (valuables, primitive money, and currency; Dalton [1977]) that are used as a means of payment. These wealth items often have established values with respect to other goods of a similar nature but vary in their convertibility into staples (Bohannon 1955; [Chapter 2](#)). They may be amassed as direct payment from subservient populations, or they may be produced by craft specialists attached to the central authorities. In the latter case, raw materials given as tribute are often used in the manufacture of these goods, and the craftsmen may be provided as part of a labor obligation from local communities. Wealth held by the state is used to pay political officials and other personnel who work for the state. The obvious advantages of such financial units are their storability and transportability, which allow a more centralized control over finance than is possible with bulky staples. Wealth is also appropriate for territorially extensive states, such as the Aztec, in which the goods used in finance are moved over long distances. The main disadvantage of wealth items is that they often have restricted intrinsic use value and so must be converted into subsistence or utilitarian goods used to support the nonagricultural personnel. As Brumfiel (1976, 1980) argues for the Aztec case, conversion on a large scale requires a market system in which the tribute goods used as state payment are sold for subsistence goods.

The distinction between staple and wealth finance is, of course, largely heuristic, and the financial base of complex societies typically involves a mixture. For example, in an agrarian society such as the complex Hawaiian chiefdoms, staples mobilized from community production are used to support craft specialists who are attached to the chiefs and who manufacture wealth items ([Chapter 6](#)). In this way, staples are converted into wealth directly. Alternatively, as seen in the Danish case, special goods may be manufactured for trade with outside groups that manufacture valuables or control valuable resources like metal ores ([Chapter 12](#)). On the other side, materials received as tribute may not be "wealth," strictly speaking, but may be a highly desired utilitarian material not locally available. The materials can then be exchanged in markets for subsistence goods from local farmers, as in the Aztec case. As we will describe for Inka state finance, staple finance is often used to support local administrative activities, and wealth finance is used to support more centralized state functions requiring long-distance movement of goods.

The Inka Political Economy: The Problem

The institutional organization of the Inka state economy has been extensively studied, primarily through reference to ethnohistoric sources (Baudin 1928; Rowe 1946; Moore 1958; Morris 1967, 1974; Métraux 1969; Murra 1975, 1980 [1956]; Godelier 1977; Wachtel 1977). Early researchers' perception of the state economy as a monolithic structure has been discarded since the recognition of significant variation among imperial provinces in economic and political organization. Nonetheless, general organizational features and policies are discernible, and it is these with which we are more concerned.

The empire of Tawantinsuyu, encompassing approximately 984,000 km², was divided into four administrative quarters centered at Cuzco. The empire comprised about 80 provinces, roughly corresponding to the territories of subject populations (Rowe 1946: 262; Schaedel 1978: 292). Provinces were subdivided into two or three political units called *saya*, each subsuming a variable number of *ayllu*. The nature of the *ayllu* is widely debated, but it is generally considered to be an endogamous kin group with a communal territory; it formed the basic corporate productive group above the household (Rowe 1946: 254; Moore 1958: 22; Zuidema 1964: 26-27; Murra 1980 [1956]: 191).

Governance was vertically oriented, as political control was vested hierarchically in offices filled by ethnic and honorary Inkas and elites from subject groups. Horizontal compartmentalization was key to Inka administration, because it discouraged interethnic alliances against the state (Schaedel 1978). Political integration was accomplished through use of both existing kinship systems and hierarchically ordered, nested numerical divisions (e.g., the decimal system of administration). The state seems to have made an effort in some instances to make state and local hierarchies congruent with one another, apparently to facilitate use of the local elites as middle-level management (Murra 1980 [1956]; D'Altroy 1992). In a complementary policy, many from subject populations were resettled, apparently to reduce threats of insurrection and to meet economic needs in other parts of the empire (Rowe 1946: 269-270; Espinoza 1975).

Economic support for the state came primarily from use of the productive capacities of the local populations (Murra 1975, 1980 [1956]). Much of the state's economic output was produced through a *corvée* labor tax, assessed to each household on a rotating basis. Craft specialist enclaves were also established, and some levies were directly laid on goods produced or traded. The state's intent seems to have been to phrase economic relations with the local populace in terms of the relations the local elites had maintained with the commoners prior to the Inka conquests (Wachtel 1977: 62; Murra 1980 [1956]:

The literature on the Inka political economy has tended to focus on institutional organization, relations of production, land tenure systems, and the social relations of exchange between the state and its subordinate populations (Espinoza 1978). Conversely, the importance of control of goods and their role in underwriting the state political economy is usually minimized either implicitly or explicitly. It is generally argued, for instance, that state activities were funded almost solely through application of a labor tax (Rowe 1946: 265; Lumbreras 1974: 229-230; Godelier 1977: 64; Murra 1980 [1956]: 92). Tribute in goods is said not to have existed (Murra 1982: 288; cf. Salomon 1986) or to have been phrased in such a way that only labor, not goods, was extracted from the local populations (Murra 1975: 243-254; 1982). Sumptuary goods are typically assigned the role of (asymmetrical) reciprocal gifts between elites, and it is argued that they were limited in circulation and therefore played a minor role in the state economy (Wachtel 1977: 70).

While these analyses have been illuminating, we remain uninformed about key aspects of state finance. In particular, knowing the form of the institutional framework does not tell us directly about choice of policy or allocation of resources within or among institutions. The focus of this chapter is, therefore, primarily the production, management, and disbursement of goods and only secondarily the state's control of labor.

The central point we wish to make is that the energetic requirements of production and management of goods were at least equal in importance to the social relations of labor and exchange in the organization of the state economy. Analysis of the state's use of a mixture of subsistence and utilitarian goods and valuables and semimonetary goods to fund its activities provides a perspective to explain the development of the state economy alternative to that which currently dominates the literature. Production of staples was primarily for use in local or provincial material sustenance, while the developing wealth finance system functioned to underwrite management and integrate local elites into the state economy interregionally. The mixture of these goods afforded the Inkas a measure of flexibility in allocating resources among the various local and interprovincial requirements of the political economy. We argue that, in both staple and wealth sectors, the state took costs of production and management into account in its organization and altered strategically both institutions of production and exchange relationships to meet its material needs.

The study of the institutional relations of labor organization and elite-elite exchange is, of course, critical to understanding the Inka economy. Similarly, we agree that although the labor tax was the principal source of surplus production for the state, the mobilization and allocation of that labor were to a

large degree contingent on the intended uses of the labor's products. Additionally, because control of access to both staples and valuable/monetary goods lay at the core of the state's ability to fund its activities, the balance in the use of the two general classes of goods merits careful consideration.

Inka Staple Finance

For the present review, we concentrate on the state political economy, which initially was constructed on the local variable subsistence economies (see Murra 1975 and 1980 [1956] for a more thorough review). The principal source of state support is normally assumed to be *corvée* labor, with local communities making no material contributions from their own goods or produce. This assertion is supported by statements in major chronicles and in some local inspections (Polo 1940 [1561]: 165,169; Cobo 1956 [1653], vol. 2: 119; Diez de San Miguel 1964 [1567]: 80; Ortiz de Zuniga 1967-1972 [1562], vol. 1: 24; Murra 1980 [1956]: 95). The labor tax was assessed to the local populace on a rotating basis, phrased in terms of reciprocal economic relationships between the households of the *ayllu* and the state (Wachtel 1977: 66). The state was thus extending a relationship of obligations that had already obtained between the local elites and their populace. The state established this relationship by arrogating to itself the rights to all productive resources in the empire, including agricultural and grazing land, undomesticated biota, and raw materials for craft production. Local communities therefore held their land only in usufruct, for which right they were obliged to render labor service to the state. In return, the state materially supported people who were performing their tours of duty, provided security through military protection and fall-back storage, and performed religious ceremonies (Polo 1916 [1567]: 20).

Mit'a (corvée labor) included collective labor on the lands of the state and of the state religion and personal periodic service for specific activities (Cobo 1956 [1653], vol. 2: 121; Wachtel 1977: 71; Murra 1982). Most subsistence goods were produced on state lands either alienated from the local communities or created through agricultural intensification such as terracing, irrigation, or expansion of fields (e.g., Chinchá [Castro and Ortega Morejón 1936 (1558): 244]; see also Murra 1980 (1956): 31,94). The state also developed and amplified specialized labor institutions. The *mitmaqkuna* were displaced colonists (either individuals or entire communities) who served as specialized farmers, military police, and artisans (Espinoza 1975). The responsibilities of the *aclla* (chosen women) included textile manufacturing and *chicha* (maize beer) production (Morris 1974). The *yanakuna* (specialist servants) performed such varied tasks

as palace and temple service, tilling of the Inka's private lands, herding, and administration (Cieza de León 1967 [1553]: 69; Wachtel 1977: 73-74).

The products of the labor of the communities and the craft specialists were collected and stored by the state in immense warehouse complexes (Cieza de León 1984 [1551]; Vega 1965 [1582]: 169). In general, the staples were stored locally to support permanent provincial personnel throughout the year and to fund periodic labor projects (Morris 1967). Many of the craft products (such as ceramics and rough cloth) were probably consumed locally, but many of the finer wealth goods were shipped to Cuzco as tribute, phrased as gifts (Ortiz de Zúñiga 1967-1972 [1562], vol. 1: 26).

The recognition that a labor tax on local communities and the establishment of labor specialists were the principal means of state finance should not, however, obscure two key features of the Inka political economy. First, a distinction exists between what the local communities saw themselves as paying to the state and what the state was actually receiving. While the state ideology may have maintained that the populace was rendering only labor and the local populations may have often reported paying taxes as such, the state was receiving both goods and services (Moore 1958: 49). The sources cited above also suggest that the labor input varied to meet the required material output in the production of several classes of goods. For instance, the quantity of land to be cultivated (or the amount of seed to be sown) and the amount of wool to be woven into cloth by the local communities were determined annually (Diez de San Miguel 1964 [1567]: 31, 39, 92). The state was thus apparently estimating its material needs and requiring the local communities to contribute whatever labor was necessary to meet those needs, taking into account their productive capacities as determined from the census counts.

Second, the state's economic relations with the populace were distinct from those with the local elites. Manipulation of these relations led to the incipient development of a partially independent state staple finance sector, on the one hand, and a state-elite sphere of exchange based on wealth goods, on the other. The latter process suggests a shift away from a state finance system based solely on local labor to one incorporating increasingly "monetized" state-local relationships. The state directly obtained wealth and monetarylike objects from local elites, often phrasing the extractions as reciprocal gifts. Direct mobilizations of manufactured and gathered products from local elites are recorded, for example, for the Quito area (Salomon 1986, 1987), for Chucuito (Diez de San Miguel 1964 [1567]: 39), and for the Guancayo polity of the upper Chillón Valley of the central Peruvian coast (Martínez Rengifo [1571] in Espinoza 1963: 63). We return to this issue below.

While our review provides us with an understanding of the basic institutional organization of the state economy, we remain uninformed about

the relationships among the different sectors. One key to the problem lies in the way we view what are generally termed the redistributional features of staple finance. As applied to the Inkas, redistribution is often seen as a means of commodity exchange and of integrating subject populations into the centralized economic system (Wachtel 1977: 62; Murra 1980 [1956]: 121-134). We suggest that mobilization more accurately describes the system of finance used to obtain goods from both the subsistence producers and the local elites than does the more general term redistribution ([Chapter 4](#)). Redistribution in complex societies combines aspects of centrally administered exchange (Service 1975: 75-78) and economic integration (Polanyi 1957: 253-254) with extraction of the goods needed to fund centrally controlled activities. As societies become more complex and a larger fraction of the collected goods is allocated to support a managerial sector, what appears structurally to be redistribution takes on increasingly the role of financing mobilization, while retaining the trappings of political and ritual integration. The key to this transition lies in the central authority's increasing capacity to enforce an extractive economic relationship with subordinate populations, while reinvesting a smaller proportion of the goods collected in supporting unattached producers or political relations with the subordinate populations.

In most current analyses of the Inka political economy, the costs and economic constraints of such mass mobilization of goods are often overlooked. Therefore, to exemplify the relationship between the energetic requirements of centrally controlled goods production and management, on the one hand, and the organization of state labor, on the other, we examine the role of centralized storage in the mobilization of goods to fund intraprovincial activities. To provide the theoretical rationale for this argument, we also review the role of storage in an expanding state economy.

Staple Finance and Storage in the State Political Economy

Storage averages fluctuations in the availability of a material over time. It is employed to synchronize variable production and use of goods, a function that is critical in both subsistence and political economies. Additionally storage can average annual variation in food production that unpredictably affects total yearly harvest of food. To hedge against crop failures with environmental causes such as random variability in climatic and disease conditions or social causes such as warfare, crops harvested in good years may be carried over from year to year.

In the subsistence economy of a local community, the most important use of storage is to average out the variable seasonal supply of food to meet the nearly constant daily household demand for it (Fig. 8.1). In most agricultural societies, food production varies markedly with the seasonal cycles of cultivation, harvest, and consumption. Food harvested during a relatively brief period of abundance is stored through the year to feed the family and community. For example, among the Gwembe Tonga of Zimbabwe, bulrush millet harvested by a woman in February is held for use by her and her family through one yearly cycle (Scudder 1962: 26-27). Such household control of and access to stored foodstuffs provide economic independence and security, with the result that the close association of living and storage areas characterizes many domestic units. The use of household storage appears in numerous prehistoric Andean societies, including Preceramic Huaca Negra (Strong and Evans 1952: 19), Early Intermediate Moche (Bawden 1982: 310), central Peruvian highland groups from the Early Intermediate Period through the Late Horizon (Browman 1970: 262-265; Earle et al. 1980: 22; Lavallée and Julien 1973: 47-48), and Chimu (Topic 1982: 153). Household storage continues to be important today in rural households (Werge 1977).

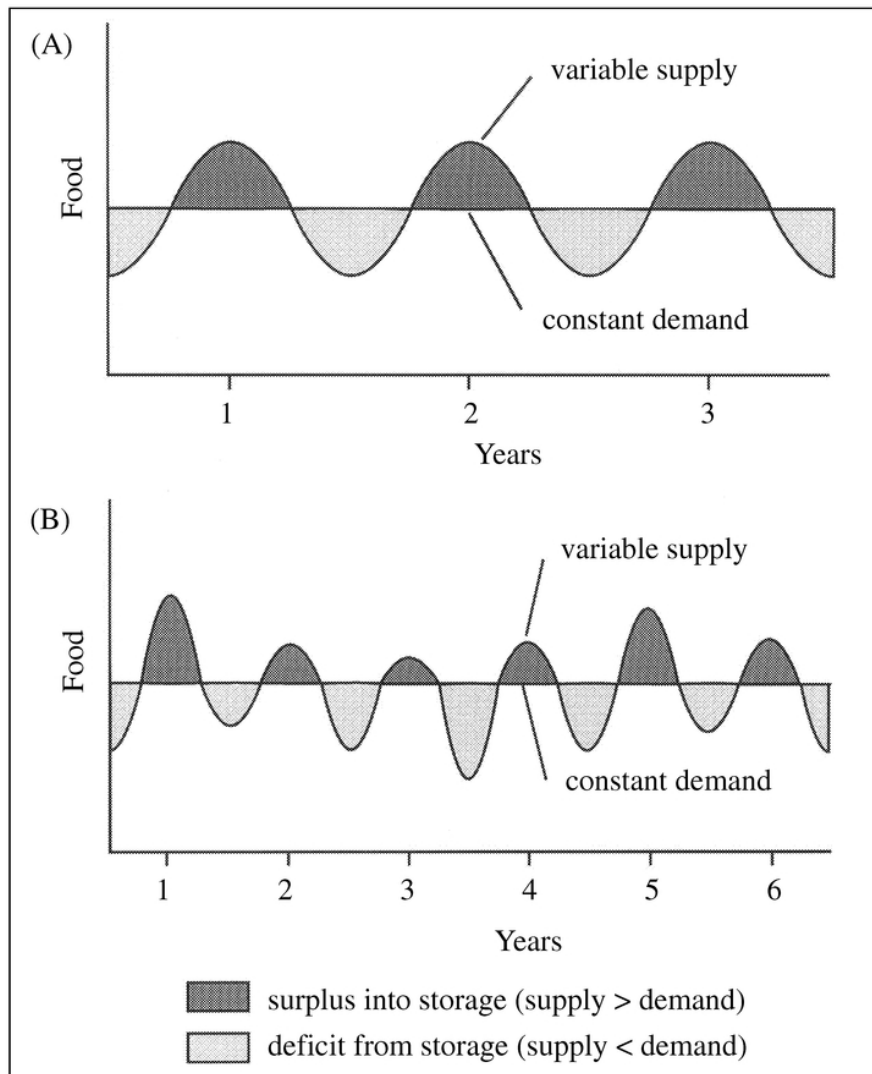


FIGURE 8.1 Schematic representation of the function of storage in the subsistence economy: to bridge the gap between variable supply and constant demand. (A) Annual cycle with no year-to-year variation, when harvest in one year provides food until the next harvest; (B) Annual cycle with year-to-year variation, when harvest in a good year (e.g., 1) is partly carried over for use in a bad year (e.g., 3).

Storage may also serve the local community as a hedge against random fluctuations in domestic food availability (Fig. 8.1). Possible ethnographic examples include storage of dried maize among the Hopi and Zuni (Stevenson 1905: 352; Hough 1915: 62; Forde 1931: 393; Bradfield 1971: 21) and of fermented breadfruit among the Marquesans (Handy 1923; Kirch 1991b). Many groups, however, do not normally carry stored goods past one season despite having impressive systems of household storage (e.g., the Gwembe Tonga [Scudder

1962], the Trobrianders [Malinowski 1935]). The avoidance of storage from year to year probably reflects the high loss rate from spoilage with most traditional storage technologies. In Ghana, for example, the loss rate for maize is about 30% per year, although maize is considered one of the most storable crops (Nyanteny 1972). Only crops that keep well with minimal treatment or that can be treated in bulk with traditional techniques, such as freeze-drying of potatoes, are suitable for storage past one season without prohibitive losses. Highland Andean peoples may have had the capacity to store household foods over several years because of the importance of maize and the development of freeze-drying techniques (Morris 1981).

In the political economy of a complex society, storage often plays a critical role in economic management. The formation of institutions, such as governmental bureaucracies, the military, and religious hierarchies, requires a constant and reliable supply of materials. When these institutions are financed primarily by staple production, storage facilities are usually necessary. Polanyi (1957: 254; Thurnwald 1932: 108) has noted that the staple finance of the ancient states of Egypt, Sumeria, Babylonia, and the Andes (Morris 1967; Anders 1981; LeVine 1993) relied on massive storage systems. Storage in state finance was also important in the Aegean during the Bronze Age (Renfrew 1972: 190-196, 287-288). Centralized storehouses were often built in conjunction with administrative and religious centers to supply permanent and temporary personnel and to meet the demands of ceremonial feasting. The storage facilities serve essentially the same averaging functions as the household granary. Their scale and significance differ radically, however, because they are used to guarantee the independence of the institutions funded through political finance. The effect of concentrating this material is to consolidate the power of the central authorities who control it.

Massive storage is not always necessary for staple finance. When staple production has little seasonality, as in many tropical environments, central storage can be deemphasized. In the complex Hawaiian chiefdoms that relied on staple finance ([Chapter 4](#)), little central storage was required because the dominant staple—irrigated taro—was produced throughout the year, and crops could be stored in the fields until needed. Where seasonal production of staples is important, however, the intensification of agriculture associated with the rise of agrarian states exacerbates the risks involved in relying on such crops, because of a reduction in the complexity of the agricultural base (i.e., by increasing dependence on a limited crop mix). This is especially critical for states with a high proportion of non-food-producers to food producers, such that a large sector of the population may not be able to rely as a fall-back on household storage.

In our description of the role of storage in the subsistence economy, it was

assumed that the need for storage reflected variation in supply while demand/use was fairly constant (Fig. 8.1). In the political economy, however, demand/use also fluctuates (Fig. 8.2). First, seasonal part-time labor places peak demands on state stores at specific times, especially during the agricultural off-season, which is the time of greatest food supply. Second, annual fluctuations in demand reflect such changing conditions as the financial needs of warfare and welfare. War often places unexpected and unusually high demands on a region's resources. In archaic and traditional societies, it generally occurs during the agricultural off-season, when the demands of food production are minimal. For example, planned warfare in seventeenth-through nineteenth-century Dahomey was conducted after the harvest (Polanyi 1968), and the Yucatec rebellion (Reed 1964) and the Inka siege of Cuzco (Santillán 1968 [1563-1564]: 114, 116, 132) failed in part because of the combatants' need to return to tend their crops. Welfare, as in the state's support of a destitute population undercut by major drought, can be equally demanding. The temporal demands on storage for this purpose are not restricted to the agricultural off-season, however, and may be concentrated during the planting and cultivation season, when household stores are most depleted. Examples of this include the opening of central Aztec storehouses during the famine of the year One Rabbit (Hassig 1981: 177) and similar use of Inka stores in time of local shortfall (Garcilaso 1943 [1609]: 382; Cieza de León 1967 [1553]: 63; Murra 1980 [1956]: 130-134).

When comparing the seasonal and annual fluctuations in Figures 8.1 and 8.2, the main point to observe is that the gap between income and expenditures is at times proportionally much greater for the institutional finance because of the fluctuating demand. For this reason, the development of the new institutional forms of statehood is often dependent on the development of effective systems of storage. In addition, the mechanisms complementary to storage that are used in a subsistence economy (e.g., reliance on kin ties or diversification of food sources) are undesirable or impracticable for a state, because they create a dependency on external sources of finance that may

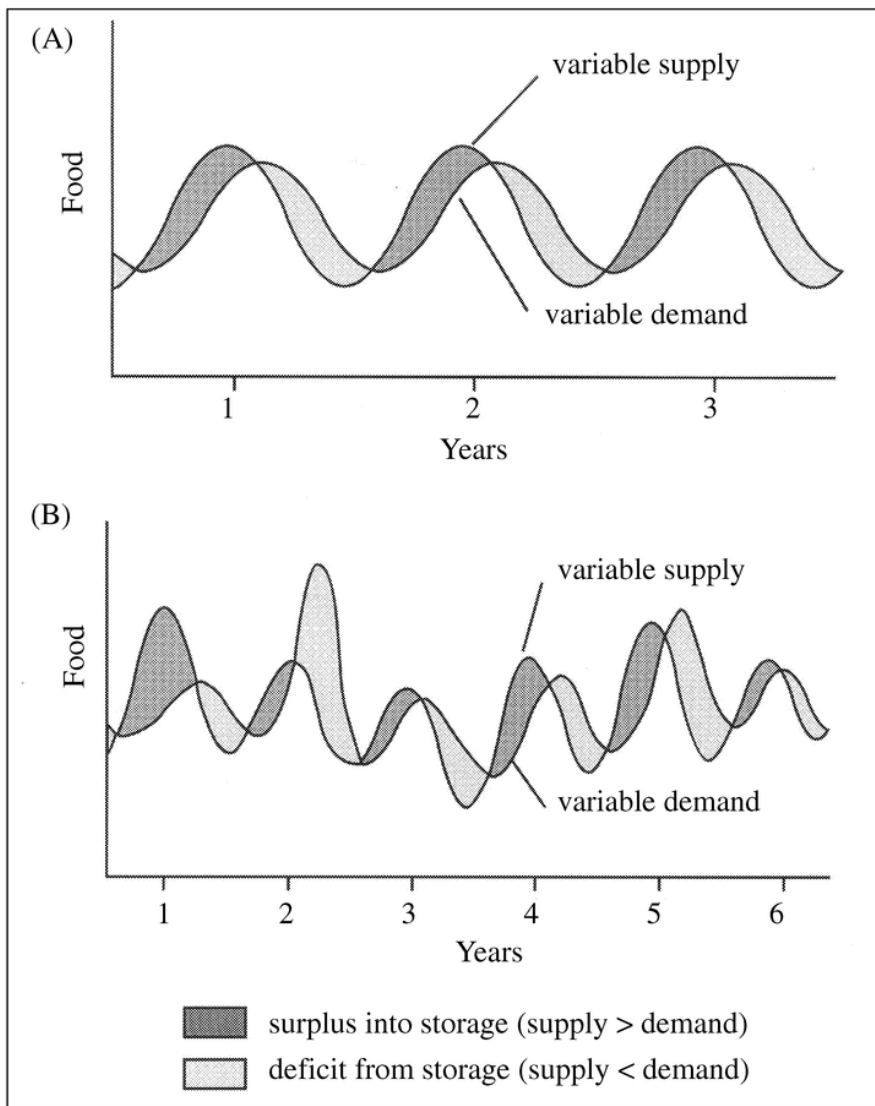


FIGURE 8.2 Schematic representation of the function of storage in the political economy: to bridge the gap between variable supply and variable demand. (A) Annual cycle with no year-to-year variation, when harvest in one year supports state laborers through the agricultural off-season; (B) Annual cycle with year-to-year variation, when supplies from good years and from years of low demand are stored for years of poor harvest or high demand.

not be available quickly enough (if at all) to respond to a major shortfall. Interdistrict movements of goods are possible (Wachtel 1982: 214), of course, and the ecological diversity in an extended empire such as that of the Inkas offers alternative food sources. However, long-distance movement of staples is labor-intensive and cost-ineffective and appears to have been of less importance than storage in regular management of the state economy

(D'Altroy 1992).

As noted above, the importance of storage in the political economy also reflects the central problem of economic and political control (LeVine 1993). Control of storage in a staple finance system is equivalent to control of the economy and hence the dependent population. In a household economy, a family uses storage to retain control over its subsistence base and economic survival. In a state, the control of central storage by the government implies control over all people who depend on the stored goods for their livelihood. This includes both part-time workers for the state and households relying on the safety provided by state support. The development of central warehouses in the agrarian state is thus a key element in the centralization of power and direction within the society. The importance of storage in social control was clearly articulated by a Hawaiian chief who grew up in the court of the paramount chief Kamehameha:

It was the practice of kings [*ali'i nui*, paramount chiefs] to build store-houses in which to collect food, fish, *tapa*, *malo*, *pa-u*, and all sorts of goods.

These store-houses were designed by the *kamaimoku* [chief counselor to the paramount] as a means of keeping the people contented, so they would not desert the king

As the rat will not desert the pantry (*kumubraka*) where he thinks food is, so the people will not desert the king while they think there is food in his storehouse. [Malo 1951 (1898): 195]

Inka State Storage in the Upper Mantaro Valley

The rapid expansion of the Inka empire created wide-ranging problems of finance for the state administration. As discussed above, to effect control over its subject provinces, the Inkas developed a system of subordinate political units, each relatively independent of the others but owing allegiance to the central authority at Cuzco. Partially as a consequence, the staple finance economies of the provinces functioned largely autonomously (Morris 1967, 1972). The labor tax was assessed by governors within provinces, and the staples accumulated through the tax were stored in warehouses at the state administrative centers and stations where the goods were to be used.

According to oral tradition, the state storage system originated in the mid-fifteenth century when the emperor Pachacuti ordered facilities built to expedite the construction of Cuzco (Betanzos 1880: 75, 77). Additional storehouses (*qollqa*) were built at provincial centers and at roadside way stations over the following century (Garcilaso 1943 [1609]: 238-239). Recent archaeological and ethnohistoric research has provided significant insight into some of the organizational and technological features of the state storage system (Morris 1967, 1972, 1981; D'Altroy 1992; Earle and D'Altroy 1982;

LeVine 1993). This research has additionally demonstrated the concentration of state activities funded by stored goods at provincial centers, where we would anticipate the concentration of those goods.

As yet, however, the intraprovincial organization of the staple finance system has not been addressed as a function of collection and disbursement of supplies. To examine the intraregional organization of this system in detail, we will discuss the state storage system in the Upper Mantaro Valley of the Peruvian central highlands. The main Inka highland highway from Cuzco to Quito ran through the valley, with its provincial capital of Hatun Xauxa. Smaller state settlements were built along the road to support transient state personnel, and stations were established to control traffic and to provide message service (D'Altroy 1992; Morris 1972).

The basis of the staple finance system in the region was the labor tax described above for the empire in general. In 1582, the Wanka reported in a Spanish inspection that they had, in effect, been required to produce staples for the state.

... they [the Wanka] were sent to tend fields of food and [to make] clothing and maids were named for their wives; and native clothing and all [things] that they could produce were ordered put into storehouses, from which gifts were made to soldiers and to the lords and to the valiant Indians and to whomever appeared; and similarly, it was ordered that those who worked in their fields and houses receive something from the storehouses. [Vega 1965 (1582): 169]

The Wanka were thus characteristic of many highland groups in that their *corvée* labor provided the basic intraregional support for the military, the elites, state laborers, and retainers.

The state storage complexes in the Mantaro Valley had greater storage capacity than any comparable facilities in the empire. In the 50 kilometers of the valley's length, the state built between 2,500 and 3,000 storehouses (D'Altroy 1992; Browman 1970: 262-265; Earle and D'Altroy 1982, 1989). In the northern half of the valley, which comprised the research area of the Upper Mantaro Archaeological Research Project (Earle et al. 1980), there were 29 complexes containing about 122,000 m³ of storage space in about 1,950 structures. The storehouses thus had the capacity to store about 1,500,000 bushels of grain, tubers, or other food. Archaeological test excavations in six structures in the main storage facilities above Hatun Xauxa have recovered the remains of all the major highland crops: maize, potatoes, quinoa, and lupine (D'Altroy and Hastorf 1984). From documentary sources, we know that the Inka *qollqa* housed a vast array of utilitarian and prestige commodities besides food, such as military supplies, rough and fine clothing, sandals, and firewood, although we do not yet know what proportion of the storage space was allocated to the various types of goods (Cieza de León 1984 [1551]; Espinoza 1971 [1558-1561]).

The administrative center Hatun Xauxa was the focus of the state's regional activity. The first Spanish travelers who passed through the valley in 1533, when it was still under Inka control, reported that the Inka army, estimated at 30,000, was garrisoned across the river from the center and that 100,000 people were assembling daily in its streets (Estete 1917 [1532-1533]: 96-97). Cieza de León (1984 [1551]) later recorded that smiths and *aclla* had been present and that 8,000 laborers were available for the service of the temple and the elite residences.

Given that the state storage system was centrally controlled and that Hatun Xauxa was the focus of state-funded activity the distribution of storage might be expected to reflect two interdependent aspects of the provincial state economy. First, storage should be concentrated at the administrative center. Second, the distribution of state-funded activities should be a function of distance from the center, particularly if transport costs of bulk goods were a significant factor in state planning.

Both of these expectations are met. Over half the regional storage capacity (about 64,600 m³) is concentrated within 1.0 km of Hatun Xauxa. The remaining storage capacity is distributed in systematically decreasing amounts as the distance from the center increases. In fact, we can account for about 79% of the spatial distribution of storage as a function of distance from Hatun Xauxa (see Earle and D'Altroy 1982 for a detailed discussion of this point). The implication is that state funding of work was strongly tied to a system of central economic control, with transport costs apparently being important to the disbursement of staple support throughout the valley.

It is intriguing to observe, however, that the distribution of the state storage complexes is not a function of the distribution of the local communities. The largest concentration of Wanka population in the immediate vicinity of Hatun Xauxa—in the Yanamarca Valley to the northwest—is not associated with state storehouses. While we do not yet understand the reasons for this, it is apparent that the state was not simply organizing its storage capacity to conform to the distribution of the sources of *corvée* labor. A major concentration of storage across the Mantaro and downstream from the administrative center was not associated with local villages; we believe that it may well have been associated with a state farm (D'Altroy 1992; [Chapter 6](#)).

To summarize our discussion of the Inka staple finance system and storage, staples were the principal source of funding for the intraprovincial economy. The high cost of transport and the consistent but occasionally unpredictable need for large quantities of staples made concentrated storage the most reasonable solution to the problem of supporting state personnel within each largely autonomous province. The organization of storage within a province can be used to estimate the spatial distribution of state-supported activities.

These activities, while centrally focused, are not restricted to the immediate environs of the administrative center. Further, the distribution of storage facilities is not a clear function of the distribution of the local population. While we understand a great deal more about the organization of staple finance and storage now than we did prior to Morris's (1967) important first work, much work is still needed.

Wealth Finance in the Inka Political Economy

Wealth finance, as noted above, involves the use of valuables, primitive money, or currency as means of payment of taxes or tribute to a central authority, which then uses these goods and others manufactured by attached specialists to fund governmental activities, particularly political services. We are deliberately extending the term to include goods that have previously been treated solely as prestige objects in the Inka economy, because their role appears to have included some monetarylike features. In Inka and other societies heavily dependent on staple finance to support state activities, wealth finance plays a complementary role. It economically integrates the managerial ranks, consisting primarily or partially of subject elites, into the central state authority structure. Goods move directly to the state and are paid out by the central authorities for political services.

The utility of valuables and of special-and general-purpose money in facilitating economic transactions has been extensively discussed elsewhere (Dalton 1967; Schneider 1974; [Chapter 2](#)), but several points bear repetition here. A state may increase the efficiency and control of its political finance system by shifting toward wealth finance. The use of goods with monetary characteristics reduces state costs in proportion to the value of the goods being transferred. Transport costs are reduced, wealth goods being lighter and more readily transportable than staples. The costs of management are also diminished, since fewer storage facilities and fewer personnel are needed to manage such facilities. A tax or payment for services also reduces the proportion of the finance lost through decay, since wealth goods are typically less perishable than staples. An additional key benefit of wealth finance is that it provides the means of interregionally integrating the economies of the state's disparate ethnic groups. A generalized medium of payment facilitates collection and transport of taxes and the payment of government obligations among provinces.

For example, the Aztec state actively promoted the use of craft goods and exotic valuables as currencies in the tax-tribute system and the central

highlands marketing system. Even in provinces that did not grow cotton, the state often required tribute of *quachtli* (white cotton cloth). These textiles, which appear to have lost their use function over time, were used in state-administered foreign trade and in market transactions for fine clothing and luxury raw materials, the latter available through ports of trade outside of the Aztec heartland (Chapman 1957; Berdan 1975: 292). Similarly some Aztec campaigns may have been directed to the conquest of cacao-producing regions, the beans being a key medium of exchange in highland markets (Berdan 1975: 297). The production and distribution of these goods were promoted by the state elites, who used them in part to obtain subsistence products from specialized agricultural communities in the Valley of Mexico (Brumfiel 1980) and to pay off political and military debts.

In the Andes, the circulation of prestige goods was widespread millennia before the rise of the Inka state. For instance, during the Early Intermediate Period (ca. A.D. 100-600) and before, precious metals (e.g., gold and silver) from the central and northern highlands, *Spondylus* shell from south coastal Ecuador, feathers from the tropical forest, and semiprecious stones (e.g., chrysacolla, lapis lazuli), some of which came from the southern highlands, were circulating in long-distance exchange networks (Paulsen 1974; Shimada 1982). Given the known circulation of these and similar wealth goods prior to and under the Inkas, it is reasonable to ask to what extent, if any, the Inka state was employing these goods as special-purpose media of tribute and as payment for services. The evidence on this point is limited and often regionally specific, but sufficient information exists to permit some preliminary conclusions concerning the state's use of such goods in the management of the political economy.

Before entering this discussion in detail, however, we should anticipate two possible objections to our argument. First, we do not imply here that the Inka state was actively promoting a market economy comparable to that of the Aztecs (LaLone 1982; Hartmann 1971). Barter did, as we have said, occur beneath the political economy, but widespread market exchange seems to have been restricted primarily to the northern Andes (Salomon 1986, 1987), with some elements of entrepreneurial exchange occurring on the central and north Peruvian coasts (Netherly 1978; Rostworowski 1978, 1981). Second, the imputation of monetary characteristics to goods whose transfer is often couched as gift giving does not preclude their serving other functions. The combination of social, ideological, and economic features is typical of special-purpose moneys (Dalton 1977), and it would be surprising if Inka wealth did not share this feature. The Aztecs' cacao and *quachtli* are just two examples of such consumable currencies in a complex state economy.

In general, wealth goods were mobilized in the Inka state in two ways. The

first of these was through direct prestation of finished products in the form of obligatory gifts from local elites to the state or taxes on economic specialists. These goods included shell beads (Salomon 1986), various gold, silver, and copper objects (Cobo 1956 [1653], vol. 3: 291), and unfinished *Spondylus* shell (Murra 1975, 1982: 249). The second was through conversion of staples into wealth objects by support of craft specialists attached to the state.

The increased importance of wealth in the political economy of the Inka state appears to be exemplified by the metals recovered in the Mantaro (Costin et al. 1989) and Calchaquí excavations ([Chapter 9](#)). Briefly, in the Mantaro, the amount of metal available in household contexts increased significantly, but this increase was exclusively in tin bronze objects for display and domestic use. As discussed in [Chapter 6](#), the increase in copper-based metal most probably reflects the state's control over tin distribution such that the routine incorporation of the tin in all copper objects allowed the state to distribute such objects in payment. Control over the production process is well illustrated by the Argentine data discussed in [Chapter 9](#). Many of the wealth objects from Inka times appear not to have had the closely controlled distribution associated with inalienable objects and thus could begin to assume functions as monetarylike devices.

Two ethnohistorically documented cases of the use of wealth goods by the Inkas to finance relations with subject elites are pertinent here. The first case involves the redirection of semimonetary and material tribute systems into the state political economy in relations with societies in which they were already present. The most clearly defined case for this is in the highlands of Ecuador, although state-local relations on the central Peruvian coast may have been similar. The second case involves the massive production and promotion of more generally used wealth objects, especially *qompi*, or line cloth.

In an incisive study of highland societies of Ecuador prior to and under the Inkas, Salomon (1986, 1987) has observed marked differences in political and economic organization from societies of the central Andes. Prior to the Inka conquest of the region in the late fifteenth and early sixteenth centuries, the societies were fairly small, independent polities that Salomon calls chiefdoms. Rather than drawing their basic support from internal production, as was the ideal in the central and southern Andes, the communities were integrated into complex exchange networks. This included market exchange, particularly in special products such as salt, coca, pepper, and cotton. Various kinds of money, such as polished gold buttons (*chaguales*), copper axes, and shell beads, also circulated within the region. These were graded in value and were variably convertible into subsistence goods in market exchange by commoners, elites, and trading specialists.

Two features of this economic organization are especially interesting here.

First, the local lords received direct payment of tribute in the form of *manias* (cloth), gold, shell beads, bone beads, copper axes, and coca. These goods moved freely up and down the political hierarchy and were used as means of payment for political services as well as for purchase of goods in the market. These goods thus played a role in underwriting the local elites' relations with other communities and within their own hierarchies. Second, there was a hereditary merchant sector (*mindalaes*) that trafficked in wealth goods (see Salomon 1978 for a comparison to the Aztec *pochteca*). They paid no tribute in labor but paid the local *caciques* (elites) in gold, *mantas*, and beads and perhaps coca and salt. The amount to be paid was calculated as a portion of their trade goods.

When the Inkas conquered the Ecuadorian highlands, they established Quito as the northern capital of the empire and laid an additional level of political organization over the local elites. In addition to establishing state lands for production of staples, the state usurped the elites' rights to a portion of the wealth tribute that had previously flowed into their hands. Salomon (1987) observes that the more distant Pasto groups had a much more widespread *mindalá* sector than did the communities surrounding the Quito and Otavalo areas, which had been integrated more fully into the Inka state as a result of their domination for several decades. In the latter areas, the traders were regulated by the Inka state as a means of ensuring the controlled flow of sumptuary items, such as shell beads, from areas that the Inka systematically failed to incorporate, including the Ecuadorian coast.

The key point to be taken from this Ecuadorian example is that the Inka state adapted a monetized tax/tribute system, associated with an indigenous market economy, to its own needs in the northern part of the empire. In effect, the goods to which the Inkas commandeered access from the local elites were used to pay these same elites for political services to the state. The Inkas concentrated the merchant sector under their control not to eliminate its activities within the regional economy but to exploit it as an efficient means of generating funds for the political economy.

Salomon (1987) points out that a comparable situation may have existed in the central Peruvian coastal Chincha Valley, where an ethnohistoric source from 1570-1575 records the presence of a class of merchant traders (Rostworowski 1970). These traders were apparently allowed to maintain an independent status under the Inka state. They circulated from Guayaquil, Ecuador, to the lea Valley of southern Peru and traveled to Cuzco, bringing, among other goods, various raw and finished *Spondylus* products into the central Andean economic sphere. The *Spondylus* was especially important to the Inkas and their subordinate polities because it was extensively used in rituals designed to induce rain and to make springs flow (Paulsen 1974; Murra

1975: 257). Whether the Chincha merchants were independent entrepreneurs under Inka rule, as Rostworowski (1970) suggests, or whether they served as delegates of administered trade is not clear. The important point is that the Inka state recognized and exploited an established trading institution to provide wealth goods to the central authorities, who could then distribute them to subordinate elites as part of payment for service to the state.

The second general case for the use of wealth finance in elite-state relations lies in the state-subsidized and-controlled manufacture and circulation of sumptuary goods. The outstanding example of this occurs in the production and distribution of fine cloth. Murra (1962) has detailed the role of textiles in the Andes under the Inkas, showing its pervasive significance in many social, political, and economic situations. In an inspection of the province of Chucuito in 1567, it was reported that the predecessors of Martin Cari, the paramount of *the parcialidad* (sociopolitical division) of Anansaya, received 50 to 100 pieces of cloth per year from Inka state warehouses. The cloth, presented in addition to a wide range of other goods and services, was for the consumption of the *kurakas*, their families, and the travelers passing through (Diez de San Miguel 1964 [1567]: 25, 34). It is not clear what (possibly variable) proportion of the cloth and other goods was at the personal disposal of the paramount and what proportion was consumed by state travelers, but the fact remains that the cloth was a perquisite of office. Further, the subordinate elites of the *parcialidad* of Urinsaya reported annually giving up to 35 pieces of cloth of their own wool (about half *qompi* and half *'awasqa* or rough cloth) to the paramount, Martin Cusi, in addition to the cloth woven from his wool (Diez de San Miguel 1964 [1567]: 33). The paramount thus had access to fine cloth through systematic awards from the state, less systematic presentations from subordinate elites, and weaving by the community and his own household. To what degree all or some of these goods were inalienable, like the feather cloak of the Hawaiian chiefs, or were alienable needs further investigation.

As discussed in [Chapter 6](#), the state procured cloth through two basic mechanisms. The first was as part of corvée labor production, in which craft specialists made cloth from wool provided by the state as their labor tax. The second was through the growing system of displaced colonists and specialist female weavers employed full-time by the state. The colonies of craft producers included weavers, such as the inhabitants of the town of Lamay, near Cuzco, at which a Wanka *compi kamayoc* (master weaver) reported that his father had held the position of *pichqapachaca kuraka*, or head of 500 households (loosely speaking)(Toledo 1940 [1571]: 159).

The state's production and distribution of cloth is clearly too complex an issue for us to address fully in this chapter. However, without pushing the point too far, it seems reasonable to view some Inka cloth as a special-purpose

money, perhaps circulating in a restricted sphere of exchange (Bohannon 1955). In this sense, *qompi* may be analogous to the Aztec *quachtli* but less generalized and less easily convertible to other goods. That is, the cloth served as a standard of payment for service to the state in a limited sphere of exchange relationships. It is important to note that this cloth flowed in *both* directions, from the local elites to the state in the form of obligatory gifts and back from the state as part of payment for work rendered in office.

The state's heavy investment in the production of fine cloth has two significant implications for our argument. First, the state was structuring economic relations with its subordinate elites in terms of a flow of valuables. By investing high value in certain commodities, the state could minimize transport costs for tax relations with subject elites, and interregional integration of disparate subject polities could be controlled through a state-regulated system of wealth manufacture and payment. Second, the state's control over the circulation of these goods allowed it to set their value within the political economy. Whether a system of exchange equivalencies existed is not clear, but within the sphere of exchange of political services and valuables/special-purpose money, the state controlled access to the wealth associated with power.

In an analogous fashion, the state controlled a large portion of the production and distribution of a specialty crop, coca. The state maintained fields of coca in the *yungas* (coastal piedmont) and in the *montaña*, cultivated by designated laborers, often *mitmaqkuna*. As part of the regular dole to corvée laborers, the state and local elites provided a ration of coca (Diez de San Miguel 1964 [1567]: 22, 82), whose amount is unclear. Basing her account on ethnohistoric sources, Rostworowski (1978) has suggested that coca was one of several (consumable) currencies circulating on the central coast of Peru during Inka hegemony and may have been used as a medium of exchange to obtain metals from neighboring highland people. Salomon's (1986) work has documented that coca served as a currency in highlands Ecuador into the colonial period. Similarly, we have seen that coca was produced as a specialty crop on the eastern side of the Andes in the early colonial period, with the intent to exchange it for other subsistence or specialty goods, such as salt (Burchard 1974; Ortiz de Zúñiga 1967-1972 [1562]). While the state's mass production and circulation of coca may be viewed as part of its ceremonial hospitality, it also suggests a state interest in providing a good to its workers that was valued both for its use as a comestible and as an item with recognized exchange value.

From the foregoing, we may argue that the Inka state promoted and employed circulation of wealth goods in its finance system both with groups that were marginally incorporated into the empire politically (Ecuador and

coastal Peru) and with groups that were intensively integrated into the state. As mentioned earlier, the Inka state attempted to retain control over regions by compartmentalizing them economically and establishing strong vertical ties between the ruling Inka and the regional elites. Control of valuables was of course instrumental in establishing and maintaining these vertical ties in the Inka state as it was in the Aztec (Brumfiel 1987).

Conclusions

We have attempted to lay out some conditions affecting an archaic state's political finance policy. We have argued that the requirements of gross production and the constraints of security and of management costs will lead the state to develop a finance system based on production and circulation of both staple and wealth goods. The staple finance system will be largely focused within a region, because of the regular and stochastic needs for large-scale funding of personnel throughout the state's territory and the prohibitive cost of transport among regions on a regular basis. Regional concentration of storage is therefore a highly adaptive strategy for a territorially expansionist state. At the same time, it creates a major problem; the stored goods may be used to fund rebellion against the state. For example, in the Mantaro Valley, from the Spanish arrival in 1533 until 1554, supplies from the massive warehouse complexes were given by the local leaders to support the Spanish war against the Inkas (Espinoza 1971 [1558-1561]). Decentralized finance may thus result in weakened controls from the administrative center.

We have also argued that the organization and allocation of labor resources is not an independent variable in the state's economic planning; the use of labor depends upon the requirements of goods production and management as much as on the socioeconomic relationships between the various producing and consuming sectors of the economy. To argue that the peasants paid taxes to the Inka state only in labor may be essentially correct, but to assert that this was the sole means of state finance obscures a range of systematic economic interactions based on goods, especially among elites. To integrate the disparate provincial economies into the centralized state political economy, the Inka state adopted a complementary system of circulating wealth goods, often in a form already compatible with those in use in the subject provinces. Controlling the procurement and circulation of wealth goods was a means of interregional economic integration that was cost-effective and subject to central authority. An additional benefit to this approach, of course, was to give local elites who received wealth from the state a vested interest in the

maintenance of the system.

The use of a mixture of staple and wealth finance in the state political economy allowed the Inkas flexibility in regional and interregional finance. The establishment of a separate staple finance system within each province guaranteed, as much as was possible under the agricultural conditions, the support of permanent, temporary, itinerant, and security personnel for the state. The risk of production and the variability in labor costs of the staple finance system were borne by the local populace in that cultivation of state lands took precedence over cultivation of community lands (see Mitchell 1980 for a discussion of the logistics of this problem). In return, the state provided a security umbrella in the form of concentrated storage, and, in fact, the support of corvée laborers by the state in the agricultural off-season can be viewed, in part, as a means of providing security for the local populace (Murra 1980 [1956]).

Archaic states were confronted with simultaneous problems of gross energy capture to support their dispersed activities, a need for security, and a need to integrate their subject regions into a centralized system of control. A mixed strategy of labor taxation, control of staple goods, and production and circulation of wealth goods permitted the Inka state to meet its disparate economic requirements. While we have chosen the Inkas as a case to demonstrate our argument, we feel that the reasoning presented should also apply to other preindustrial states. To understand the different pathways that state societies tracked as they expanded and collapsed may ultimately rest on understanding the different mechanisms of finance, their articulation with strategies of power, and the unforeseen consequences of particular economic choices (Earle 1997).

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Wealth Finance in the Inka Empire

Evidence from the Calchaquí Valley, Argentina

In the 1400s, the rapidly expanding Inka empire conquered the Calchaquí Valley in what is now northwestern Argentina. Why did troops of the empire annex this region, located some 1,500 km by tortuous mountain road from the empire's center at Cuzco? This simple question raises complicated issues concerning the grand strategy and intricate operations of the largest prehispanic empire of the New World (D'Altroy 1992). Although the question elicits only partial answers, because of the subtleties of human intentions and political dynamics, a central concern of any state is to finance its operations. Thus I rephrase the question more specifically to ask: How did the conquest of the Calchaquí Valley serve to finance the Inka empire?

Located on the southern edge of the empire, the Calchaquí's geographical position led us to expect that the production and expropriation of wealth was a probable focus of Inka operations. Recent archaeological research at the state settlement of Potrero de Payogasta has borne out our supposition, demonstrating the direct involvement of the Inka in several craft industries. This chapter examines how the Inka state used the conquest of the Calchaquí Valley to expand its system of wealth finance.

Political Finance and the Inka Empire

As discussed in [Chapter 8](#), to explain the evolution of complex societies requires an understanding of how resources are mobilized to support the activities of new institutions. In states, the creation of systems of taxation is basic to institutional development and maintenance. The Inka empire illustrates clearly how the political economy underlay institutional expansion.

By A.D. 1400, the Inka were organized as a chiefdom, and existed in a world of warring chiefdoms, each unable to amass significant economic and political advantage to expand geographically (Rowe 1946; Hyslop 1977; Johnson and Earle 2000). Initial Inka military success set the stage for the rapid conquests of

the Andean world: From Ecuador to Argentina, the army defeated more than 100 separate ethnic groups, incorporating their people and territories into a unified polity.

To consolidate the conquest, the Inka maintained a large and mobile army, created a far-flung system of roads (Hyslop 1984), and constructed an extensive settlement infrastructure for ceremonies and administration (Morris 1982). Institutions of domination and integration formed the posts and beams of the empire. They created mechanisms to exert and legitimize force over a world that had been composed of many separate polities, economies, and ethnic identities. To support these new imperial institutions necessitated the development of an elaborate political economy as a system of finance.

Staple finance with its elaborate warehousing complexes was the primary financing mode used by the Inka empire in the Mantaro Valley and elsewhere within the imperial core (Snead 1992; Chapter 8). But staple finance on a large scale is problematic because of the logistical problems of transportation. Staples by their very nature are heavy and bulky. Except where water transport is available, movement of staples over any distance is impractical (Drennan 1984; Hassig 1985; D'Altroy 1992). To move staple goods requires so much human labor that the staples are consumed in transport and little remains for use at the terminus. For all intents and purposes, staple finance must remain decentralized. Rather than moving the products, the staples must be retained in the hinterland close to their locale of production. As a consequence, staple finance typifies chiefdoms and equivalent "city states" for which distances to the territorial boundaries rarely exceed 50 km (Renfrew 1975).

Where staple finance is significant in more extensive states, as in the Inka case, it is necessary to disperse state functions. Essentially the state activities become mapped on the distribution of staple production, but this solution created major difficulties in control for the centralized administration. A lack of centralized control over the financial structure translated into a decentralized and correspondingly weak basis of power. Among the Inka, a system of wealth finance was apparently developed to counteract these logistical problems (Chapter 8).

What transformed prestige-goods exchange, characteristic of many societies (Chapter 2), into a finance system is the ability of an elite segment or other institutional group to control the production and circulation of the wealth. Then, by directing the flow of wealth, objects can be used as political currency, exchanged for various obligations within the institutions through which elites govern. In chiefdoms, for example, prestige-goods exchange (Friedman and Rowlands 1977) acts in part as a system of wealth finance. Typically the goods are exchanged within spheres of exchange, acting as inalienable objects with

political restrictions on their distribution (as for example the feather work in the Hawaiian chiefdoms described in [Chapter 7](#)). In the prestige-goods exchange model (Friedman and Rowlands 1977), control rests largely on the dominant social position of the chief in regional exchange. Control can also be exercised more strategically by dominating the production of wealth by having attached specialization ([Chapter 6](#)).

Characteristically wealth objects involve rare foreign materials, exceptional skill in manufacturing, or large amounts of labor such that it is difficult for "fakes" to be made outside of the institutional setting. Permitting archaeological identification, attached specialization takes place within the settlements of the elite or institutional patrons and often directly within (or immediately adjacent to) their households or buildings. Staples, mobilized from local communities, were moved to the administrative centers, where crafters supported by the staples produce the fine objects that then could be moved to Cuzco and retained in central storehouses (Morris 1967). As needed, the wealth would be returned to the hinterland and given to local lords and others working for the state. Access to these objects, both as inalienable symbols of office and as exchangeable objects of value, meant that local position was recognized by state-supplied symbolic objects. By controlling the production and distribution of wealth, the Inka state was able to determine partly the local status system based on consumption by those the Inka had conquered ([Chapter 11](#)).

In simple terms, local staples were invested by state overseers in the support of attached specialists who produced wealth with a variety of uses, both highly restricted and less so. The valued objects could be held centrally and moved strategically by the state to retain an integrated control over the political economy and the institutions that it financed.

Core and Periphery in the Inka Empire

We have conducted extensive research first in the Mantaro Valley, Peru (Earle et al. 1980, 1987; D'Altroy 1992; Hastorf 1993; D'Altroy and Hastorf 2001) and now in the Calchaquí Valley, Argentina (D'Altroy et al. n.d.). These regions held very different strategic positions in the Inka empire, the Mantaro in the core and the Calchaquí at the periphery (see [Fig. II.1](#)). Thus the two regions most probably had divergent roles in the division of labor within the Inka political economy. For the ongoing Proyecto Arqueológico Calchaquí (PAC), the goals, field methods, and recording were directly comparable to the Mantaro Valley research. In so doing, we structured our research to recognize

similarities and differences in local and state economic activities.

The Mantaro Valley was in the empire's mountain core, controlled and involved directly in state agricultural development. The Mantaro is a productive, intermontane valley that had a dense pre-Inka population organized as chiefdoms, which are documented dramatically by large, well-preserved settlements (Earle et al. 1987). Following conquest, the valley became a center for Inka state activities. The main north-south trunk road passed directly through it and its population was resettled in smaller settlements located at lower elevations. Prior to conquest, the region's economy had been based on intensive agriculture, and this economy changed little. The Inka state, however, effected a few selective changes to integrate the region into the state ([Chapter 10](#); Costin et al. 1989; D'Altroy 1992).

Nowhere is the system of staple finance so visible as in the Mantaro Valley. Even today, the storage silos stand prominently on the hills above the ruins of Hatun Xauxa and line the slopes that bound the valley to east and west. Outside the empire's mountainous central core, storage complexes such as those of the Mantaro Valley are rarely described (Snead 1992). In most cases, storage there was comparatively small scale and directly associated with administrative settlements, probably for their direct support. The limited scale and distribution of storage on the peripheries suggest that these more remote outposts were important not for amassing staples but for acquiring wealth. In Ecuador, for example, Salomon (1986, 1987) describes how the Inka state worked through the chiefly elite and their specialized traders to procure gold and feathers from beyond the empire's borders. The design of the Argentinean project capitalizes on the opportunity to investigate the proposed role of wealth extraction from the peripheries for the developing political economy of the empire.

The Calchaquí Valley was positioned on the margins of the Inka empire. Located at 2,500 in above sea level in an arid intermountain valley, the northern Calchaquí is a rural, thinly populated region of Salta Province. Prehistorically the region was home to various Santamariana chiefdoms. Subsistence depended on irrigated farming of maize and quinoa along the streams and camelid herding at higher elevations. Settlements comprised a two-tiered hierarchy: (1) town-size settlements, like La Paya, contained public structures located near open plazas and several hundred residential compounds each with one or more circular houses and enclosed private spaces; and (2) smaller settlements, occasionally with a plaza, that contained ten or more scattered houses. The local archaeological assemblage is known for dramatic anthropomorphic urns and for its tin-bronze cast metallurgy (Ambrosetti 1908).

Following conquest, the Inka empire extended its high-elevation trunk road

through the valley and built there a series of administrative and military settlements (Hyslop 1984: Chap. 11). The largest new Inka settlement was apparently Potrero de Payogasta; other facilities included the fortress at Cortaderas, an Inka complex within the local settlement at La Paya, various smaller *tambos*, and other related settlements. No large-scale storage facilities have been described for the valley; rather small complexes are found within both Inka and local settlements where they likely provided immediate support. The botanical remains recovered from the Inka settlement of Potrero de Payogasta suggest that staple goods were produced and processed immediately around the site such that the staple finance system may have been minimally elaborated (D'Altroy et al. n.d.).

During the first research season, we excavated thoroughly at the Inka administrative settlement of Potrero de Payogasta and less extensively at the local Santamariana settlement of Valdéz (D'Altroy et al. n.d.). These excavations provide an opportunity to evaluate the different activities taking place within the state and local settlements and more broadly to describe the contrast between the activities of the state in the core region of the Mantaro with the peripheral region of the Calchaquí. My research concentrates on evidence for production in a number of small industries involved in the manufacture of wealth objects, especially as used in personal decoration and display.

Wealth Use and Production in the Calchaquí

The manufacture and circulation of wealth were of special concern to our investigations. On the basis of the theories elaborated earlier, we wanted to see whether the Inka state coopted the system of wealth finance ([Chapters 8 and 11](#)). To investigate the role of wealth finance in the Inka empire as it expanded rapidly to the south, we wanted to be able to evaluate four critical questions: (1) Did wealth exist in the economy of the Calchaquí? (2) Was this wealth in forms or media that could have been controlled effectively by the state? (3) Was the manufacture of wealth concentrated within Inka state facilities in the Calchaquí? (4) Was the Calchaquí wealth then exported for use in state finance?

Objects of Wealth

In answer to questions 1 and 2, wealth as objects of personal decoration and

display existed in the Calchaquí sites, but was unexpectedly rare, being found in finished form primarily in burials. The materials, from which the wealth was manufactured, could in part have been controlled, because they were moved long distances over the Inka roads. On the roads were many state facilities to monitor movement (D'Altroy 1992). Marine shells came from the Pacific Coast. The finished copper objects were alloyed with nonlocal tin, imported from Bolivia. Other materials, including mica, turquoise, bone, and copper, were procured within the Calchaquí region and their control would have been more difficult to maintain.

Wealth recovered in our excavations included beads and other items of personal decoration (Table 9.1). Beads were made of marine shell (including various Pacific Coast genera, *Mesodesma*, *Olivella*, and *Spondylus*), with additional examples of local land snail, of stone (especially turquoise), bone, and human teeth (Fig. 9.1). Beads were typically small, simple, and round (Fig. 9.1.3k, 1, m, n)—shell, 3.5–5.0 mm in diameter and 0.7–1.2 mm thick; stone, 2.0–6.6 mm in diameter and 0.7–2.8 mm thick. A few of each type are significantly larger (Fig. 9.1.3h)—shell, 8.6–9.4 mm in diameter and 2.0–3.3 mm thick; stone, 9.1–11.4 mm in diameter and 4.5–13.5 mm thick. One tubular bead (Fig. 9.1.3i) was made from *Spondylus*. Several examples of small pendant beads include examples of sea shell (Fig. 9.1.3k) and an adult human incisor drilled through the root for suspension (Fig. 9.1.2b). Thin mica sheets were also cut into disks (Fig. 9.1.4h, j) and simple geometric plaques (Fig. 9.1.4k, 1, m, n) that were perforated, presumably to be sewn onto clothing as the original sequins. One ear spool, cut in the form of a fish, was fashioned from a llama humerus. The only finished metal object recovered was a small silver clip (Fig 9.1.1e).

Finished wealth was rare in our excavations when compared to recovery rates from the Mantaro. To calculate the frequency of items that are rare, we used a measure of ubiquity—the proportion of our excavated unit/levels with an object present (Dennell 1976). We were careful to use this measure only within comparable deposits (primary household trash vs. ceremonial contexts), and where the number of excavated proveniences exceeded 20. At Hatunmarca and Marca, Late Horizon Wanka settlements in the Mantaro, finds included a wide range of bronze and silver disks, *tupu* pins, *tumis*, needles, and other items. For the Late Horizon, finished metal objects were recovered from 9.5% of household excavated unit/levels. In contrast, at Potrero de Payogasta, the full list of finished wealth included only the silver clip, bone ear spool, and a few dozen beads. Ubiquity of the finished metal was only 0.3% and for the marine shell beads was 3.3%. At Valdéz, no finished metal was recovered, and bead ubiquity was 1.2% from household contexts (that is, 1 bead from 83 excavated collections). On the basis of their rarity in general contexts, I

conclude that decorative wealth was rarely used in daily life.

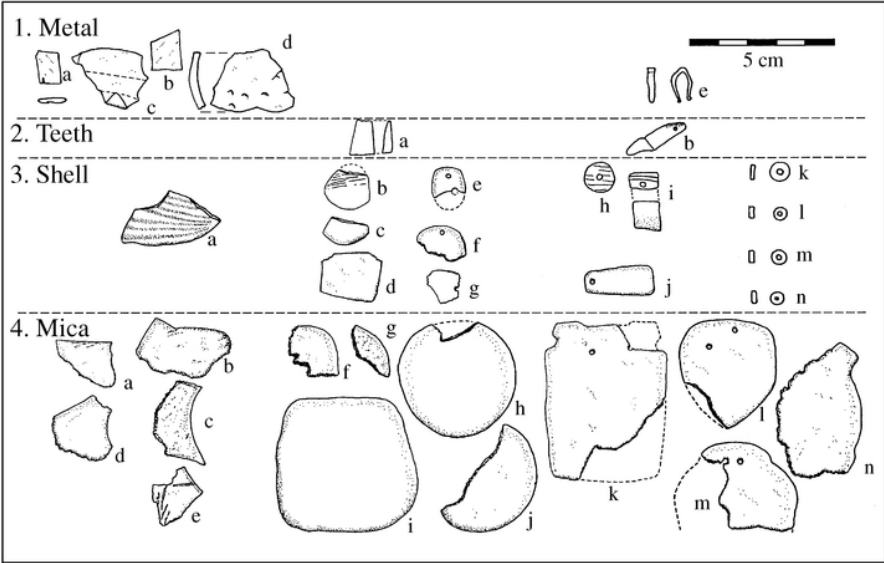


FIGURE 9.1 Illustration of manufacturing debris and finished wealth objects of metal (1a-c, gold; 1d, copper; 1e, silver), human incisors, marine shell, and mica. Manufacturing debris is to the left; unfinished pieces, center; and finished wealth, right. All pieces illustrated are from the Potrero de Payogasta excavation in 1990.

No Late Period burials were excavated by PAC, but we know of wealth recovered by earlier excavations (Ambrosetti 1908; González 1979). From the nearly 200 tombs excavated from La Paya, a large, local Santamariana settlement, wealth included elaborate ceramics, bead strings, and 35 metal objects. One large mica sheet was also recovered. Most of the metal was tin bronze in such forms as axes, awls, tweezers, and *tumis*; one silver and two gold objects were included in the inventory. An impressive thin gold-sheet diadem was one of these items. Although local wealth certainly existed, it must have been

TABLE 9.1 Ubiquity of manufacturing debris and list of finished wealth items recovered from Potrero de Payogasta and Valdéz in Argentina

			Shell Debris				
Site	Archi- tectural Division	Metal- lurgical Debris (%)	Marine (%)	Land- snail (%)	Mica Debris (%)	Number of Unit/ Levels	Finished Items
Potrero							
Households	4	8.0	4.0	0	0	50	mica plaque
	5	33.3	0	0	55.6	27	human incisor, 2 beads
	7	7.1	14.3	2.4	31.0	42	mica plaque, bone ear spool
	9	0	0	0	3.2	31	3 beads
	14	4.2	9.9	1.4	28.2	71	mica plaque, 7 beads
	16	11.1	20.0	8.9	40.0	45	silver clip, 2 mica pieces, 5 beads
Total Ubiquity		9.0	9.0	2.3	25.2	266	
Ceremonial	15	2.4	4.9	0	4.9	41	
	17	0	0	0	4.5	22	
	21	0	0	0	8.0	25	
Total Ubiquity		1.5	2.9	0	7.4	68	
Valdéz							
Households	1	32.5	2.5	10.0	0	40	1 bead
	3	7.0	0	4.7	2.3	43	
Total Ubiquity		19.3	1.2	7.2	1.2	83	

carefully curated, entering the archaeological record almost exclusively through burial ritual.

Production of Wealth

In contrast to the comparative rarity of finished wealth from our Calchaquí excavations, evidence for the manufacture of metal, shell, stone, and mica wealth was abundant (Table 9.1; Fig. 9.1). To answer questions 3 and 4, craft manufacture of wealth was directly attached to Inka facilities, where it would have been carefully monitored. The control over the production process appears to have been highly selective. At least some regulation over wealth manufacture may have been made by controlling very specific moments in the economic process, like the movement of the shell and tin, and using this selective command to manage craft industries and wealth finance more broadly. The extensive evidence for manufacture, in contrast to the scarce evidence for finished objects, suggests that much of the locally produced wealth was exported from the region. This may have been especially true for the copper produced in the Calchaquí.

The manufacture of metal involved three steps, the evidence for which is summarized in Table 9.2. First was primary mining and smelting of ore. Initial extraction took place in one of many small-scale mines exploiting superficial copper ores. At La Encrucijada, located approximately 50 km to the north of our sites, an open pit mine was adjacent to relatively large ore grinders and smelting furnaces (Rodríguez Orrego 1979). Within our sites, small bits of copper ore that does not occur in the immediate area of the sites suggest that some primary smelting took place here as well. Analysis of these samples and

residue from molds shows that the majority of the ores were chlorides such as atacamite and paratacamite (Howe 1992). Mining of such ores would have been fairly simple because deposits were superficial. Primary processing would have involved crushing and heating, both simple procedures for these ore types. Second was the processing of the metal into pure copper ingots, produced using simple pyrotechnic and ceramic technologies. No evidence of furnaces or pipes was found, but 21 ceramic molds, including several with metallic copper residues (Fig. 9.2), and one probable crucible were recovered. Because metallurgical slag was very rare on our sites, we concluded that most primary processing took place elsewhere. The presence of many examples of a frothy nonmetallurgical slag suggests, however, intense burning, quite probably from the wasting of the ceramic molds, many of which show vitrification resulting from excessive heat (Howe 1992). In several architectural units at

TABLE 9.2 Ubiquity of manufacturing debris from the architectural subdivisions excavated at Potrero de Payogasta and Valdéz in Argentina

Site	Architectural Division	Scrap (%)	Copper Ore (%)	Molds (%)	Non-metallic Slag (%)	Number of Unit/Levels	Other
<i>Potrero</i>							
Households	4	0	0	0	6.0	50	firing feature, crucible firing feature, slag
	5	3.7	3.7	0	18.5	27	
	7	7.1	0	0	0	42	
	9	0	0	0	0	31	
	14	0	2.8	1.4	0	71	
	16	0	8.9	0	2.2	45	finished silver clip
Total Ubiquity		1.5	3.8	0.4	3.4	266	
Ceremonial	15	2.4	0	0	0	41	
	17	0	0	0	0	22	
	21	0	0	0	0	25	
Total Ubiquity		1.5	0	0	0	68	
<i>Valdéz</i>							
Households	1	0	12.5	25.0	0	40	slag
	3	0	7.0	0	0	43	
Total Ubiquity		0	9.6	12.0	0	83	

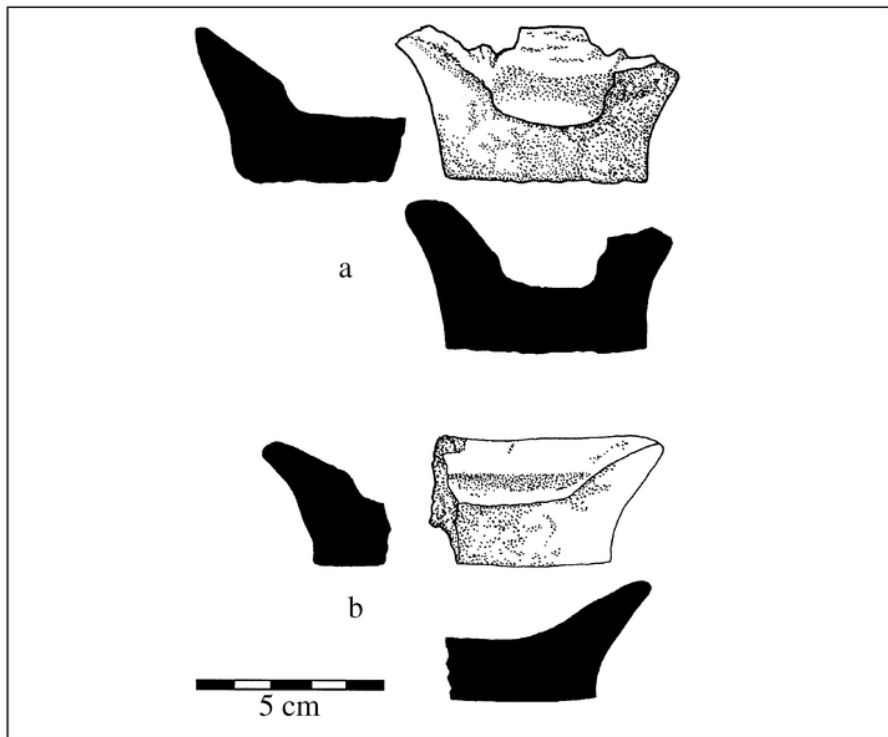


FIGURE 9.2 Ceramic molds for casting copper ingots. Pieces are from architectural division 1 in Valdéz. (originally drawn by Margaret Jackson)

Potrero, we encountered large burned areas within structures; these burned areas were associated with other evidence of metallurgical activities. Third was the final fabrication, involving alloying, casting, hammering, and cutting. In Potrero, excavations recovered three examples of folded sheets of gold scrap (Fig. 9.1. La, b, c) with evidence of casting and cutting and one scrap of cast copper (Fig. 9.1.1d).

Evidence for the production of beads includes various stages in their manufacture (Fig. 9.1). The shell was procured both from the Pacific Coast and from regional forest zones. We would often recover concentrations of shell debris, occasionally with distinctively cut edges (Fig. 9.1.3a). Unfinished bead blanks (Fig. 9.1.3b, c, d) and beads broken in the process of drilling or grinding (Fig. 9.1.3e, f, g) were also found. The unfinished beads may be undrilled, rough blanks, partially drilled and broken beads, or unpolished beads.

Evidence for the manufacture of mica includes abundant mica waste. In the administrative settlement of Potrero, all patio groups had mica debris, and two patio groups had unusual high ubiquities of 55.6% and 40.0% (AD 5 and 14). Much of the waste is undiagnostic, but since the material does not occur locally, its distribution is probable evidence for manufacture. Several large

pieces of unworked mica were collected from Potrero. Smaller debris was found with cut edges suggesting the negative forms of the finished objects, such as a disk (Fig. 9.1.4c, d), and with distinctive scoring marks of the original cutting (Fig. 9.1.4a, b, e). Incomplete disks and other pendants were probably ripped during cutting (Fig. 9.1.4f, g, h, i, j). Associated obsidian flakes may have been used in the manufacture of mica ornaments.

To evaluate the evidence for craft production in the Calchaquí, I look first at the important Inka administrative settlement of Potrero de Payogasta (Fig. 9.3), which is located along the Inka road in a thinly settled side valley of the Calchaquí. Potrero is divided into two main sectors. The civic-ceremonial precinct is located on the northern third of the settlement across a lower saddle of the main ridge. The precinct includes a number of architectural divisions, which we designate AD and number sequentially: a large enclosed plaza (AD 15) with a central *usnu* platform, a *kallanka* (AD 17; gabled roof, rectangular building), and several special compounds (for example, AD 21). In the ceremonial precinct, dignitaries would have been hosted, and public state events would have been staged. Running south from the plaza is the ridge that dominates the settlement's layout. On the very top of this ridge are several patio groups with rectangular houses (e.g., AD 4 and AD 7) that we believe to have been the residences of the Inka officials. Two large circular buildings (e.g., AD 14) were down the ridge at a somewhat lower position, directly above the plaza. Along the edges of the central ridge were a number of residential terraces (e.g., AD 5 and AD 16). A secondary ridge with simpler residential compounds (e.g., AD 9) extends to the west.

At Potrero, evidence for manufacturing in all industries is fairly abundant. Productive activities were documented in the following frequencies: metallurgical debris in 7.5% of all unit/levels, marine shell debris in 7.5%, and mica debris in 21.6%. In contrast, in the Mantaro Valley during the Late Horizon, evidence for metallurgy at Wanka settlements was ephemeral—only 1.4% unit/levels yielding metal ore (Owen 2001). No evidence existed there for the manufacture of marine shell or mica. In the Calchaquí Valley, it is evident that craft production was comparatively common within the Inka settlement.

The internal pattern of manufacturing debris throughout Potrero demonstrates that craft production took place within households closely associated with the elite residential area. An obvious division seen in the archaeological evidence distinguishes the activities of the northern civic-ceremonial district and the main residential precinct to the south (Table 9.2). Despite extensive excavation, little manufacturing debris was recovered from the northern third of the site. The ubiquities are as follows: metals, 1.5%; marine shell, 2.9%; mica, 7.4%. In all cases only the odd piece of shell or mica was recovered; no concentrations suggest manufacturing locations. This lack of

a state institutional context for craft production contrasts with the pattern at Huanuco Pampa; Craig Morris (1982) describes there a special architectural compound, directly off the central plaza, where evidence of textile production was concentrated.

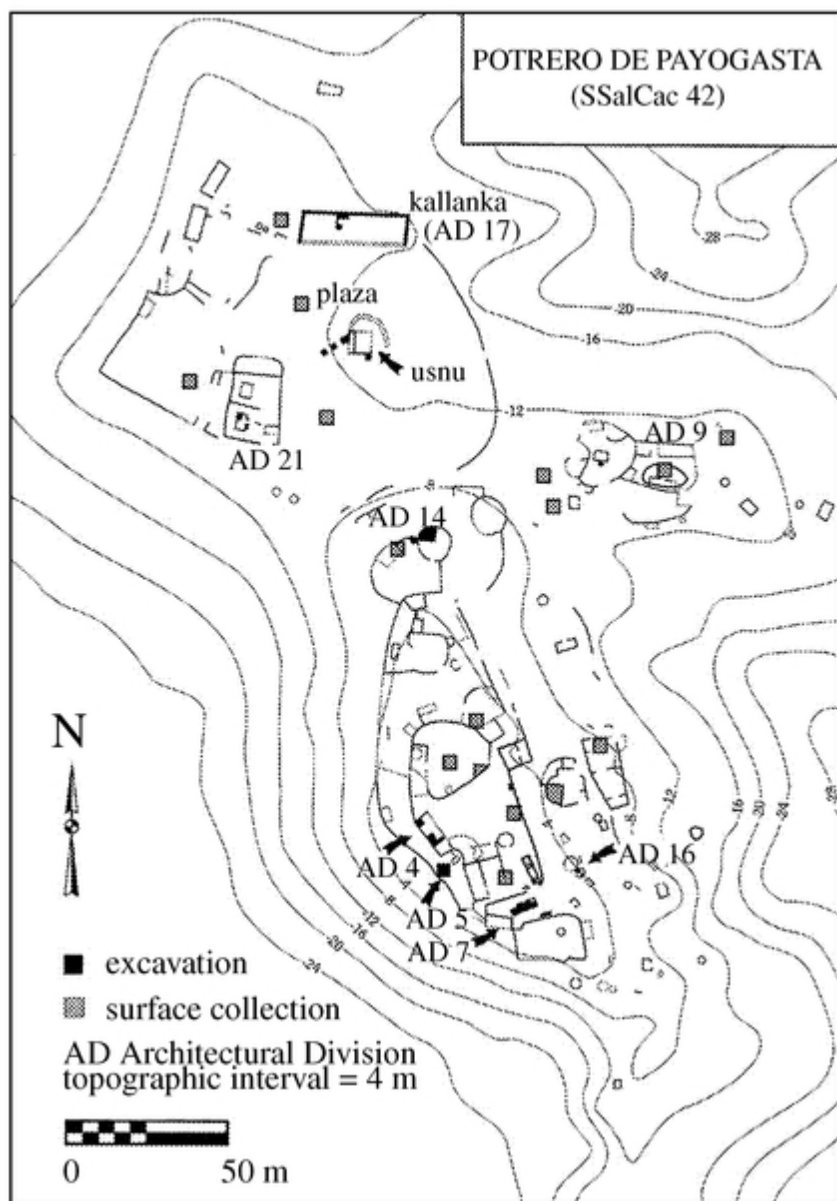


FIGURE 9.3 Map of Potrero de Payogasta. (after original map by Elizabeth DeMarrais)

At Potrero, craft production took place within households. All five residential units on the central ridge (AD 4, AD 5, AD 7, AD 14, AD 16) were

involved in small craft manufacturing (Table 9.1), The larger residences (AD 4 and AD 7), which we suspect to have been the residence of Inka lords, were directly involved in metal production. In the large rectangular building of AD 4, we recovered copper ore, a probable crucible fragment, and several examples of nonmetallic slag. A broad firing feature was located on the floor against the eastern wall of the structure. In the somewhat smaller rectangular structure of AD 7, we recovered three scrap pieces of gold sheet that had been cast and then cut with a chisel-type tool; pock marks on the surface might indicate cementation (Howe 1992). Two of the pieces had been folded as if to prepare them for reuse. It seems highly likely that the fabrication of gold pieces, perhaps like the head ornament recovered from La Paya (see Ambrosetti 1908), took place in this elite residence. On the terrace AD 5, immediately below the elite patio AD 4, a second broad firing feature was located within a smaller rectangular structure. This firing feature was associated with copper ore, a possible piece of copper slag, nonmetallic slag, and the piece of cast (alloyed?) copper scrap showing gouge marks and scoring. The large circular structure in AD 14 contained another possible firing feature, copper ore, two mold fragments, and some nonmetallic slag.

Evidence for the production of the small decorative items of shell, stone, and mica was found commonly in AD 7 and AD 14, which are thought to be fairly high-ranking households based on their location and impressive architecture. The highest density of the mica manufacturing waste was found, however, not in the highest elite house (AD 4), but in the houses (AD 5 and AD 16) located just off the top of the ridge. The structure in AD 16 was circular, indicating probably a non-Inka occupant, in contrast to the Inka-style buildings in AD 4 and AD 7. The close spatial association suggests that this local crafts family was attached to the nearby Inka patrons. The high density of craft activities on the top of the settlement, which we believe to be the elite residential core, contrasts with the very low density of manufacturing debris recovered from the residential excavation (AD 9) located on the side ridge, removed from the elite compounds.

The high density and distribution of manufacturing at the Inka administrative site of Potrero is unambiguous evidence of attached specialization. Craft manufacture took place both within elite residences and in local residences immediately associated with the elite residential sector. Substantially less manufacturing apparently took place in other residential areas and in the ceremonial precinct.

The distribution pattern of wealth debris highlights the generalized character of craft production. The craft industries involving stone and shell beads and the mica sequins were repeatedly found in the same households (AD 7, 14, 16). Also found in these houses was evidence of obsidian

manufacture, suggesting that the households were involved in generalized cutting and drilling industries for a range of small-scale decorative crafts. Because the process of manufacture was apparently fairly simple and easily transferable from industry to industry, they took place together. This joining of industries would seem appropriate and effective where the overall level of production was not high and the technology of production was simple and transferable across multiple tasks.

Generalized craft industries may have characterized many relatively simple, small-scale craft manufactures in world prehistory. In Oaxaca, at the site of Ejutla, Feinman and Nicholas (1991, 1993) describe conjoined small-scale production of stone and marine shell beads requiring directly similar technologies for cutting, grinding, and drilling. The diameter of the bead holes appears to be standardized across materials, suggesting that the same drills were used for all bead materials.

Control over craft production can be maintained either by restricting access to a rare material or by managing a complicated step in the production process for which technical knowledge was limited. For the production of the beads, the manufacturing techniques were elemental. Control over the production of this wealth was apparently maintained in the Inka empire through control over the availability of sea shell. Then, to the degree that other materials were manufactured by the same crafters living under Inka supervision, a monopoly could be maintained over the generalized industry. In this case, control over the production of the shell, imported long distances along the Inka road, extended to partial control over other related craft industries.

In analyzing the ceramic crucibles and molds from the Calchaquí sites, Hagstrum (1992, 1993) has developed a concept of *intersecting technologies*. Summarized briefly, she argues that pyrotechnic procedures that included technical knowledge of clay, fuel, and fire were common to both ceramic and metal manufacture. Metallurgy also used specific ceramic tools, for example, crucibles and molds. At the Calchaquí sites, where ceramic materials and forming techniques appear similar for both cooking vessels and the ceramic tools of metallurgy, they would probably have been manufactured by the same artisans. It may well be that the two industries (metal and ceramics), at least where they are technically simple as in the Calchaquí case, were intertwined. Supporting this supposition, we recovered evidence of ceramic manufacture (an unfired base of a cooking pot) from the elite patio AD 4, where evidence of the metal production was also found. The important point is that the production processes controlled by the Inka involved multiple industries with crosscutting technologies such that control over one aspect could extend into much broader control. The pattern at Potrero may now be compared to the production evidence from a nonstate settlement.

The site of Valdéz was selected for excavation to represent a local, Inka-period settlement. It was the closest large Santamariana settlement, then known, to the Inka settlement of Potrero, and we expected that it would contain the residences of local lords that might be associated with local crafters. Valdéz consists of approximately 500 mounds, both collapsed houses and trash heaps, distributed across 50 ha on a gently rolling land surface near the Calchaquí River. Some distinction in status may be documented by larger mounds that are located toward the settlement's center; however, the residential arrangement does not suggest planning (DeMarrais 1993).

At Valdéz, the evidence for specialized manufacture is more limited and specific than at Potrero de Payogasta. The primary evidence for bead manufacturing debris was from land snails and stone. The regional availability of these materials may have made them comparatively difficult for the Inka to control. Working debris from land-snail shell was recovered in three of the four household excavations. From the two households for which adequate data are available, overall ubiquity of land-snail debris is 7.2%. In comparison, marine shell debris was recovered from only 1.2% of the unit/levels. Mica debris was also rare (ubiquity 1.2%), found only as very small and scattered bits that may not have been the result of manufacture. No large mica sheets, debris with cut marks, or unfinished items were found. Despite an extensive lithic industry, including the importation and working of considerable obsidian, the bead and sequin industry was very limited.

The Inka empire selectively controlled the manufacture of the small decorative items that were most likely used locally to define status. Mica production was strongly concentrated within the Inka administrative settlement. For shell manufacture, although local land-snail beads were made at Valdéz, marine shell items were made primarily at the state settlement. The state apparently controlled production of the marine shell (as opposed to land snail) beads by controlling the long-distance movement of the shell from the Pacific.

For metal manufacturing, the evidence is quite different. The primary indication is the presence of many ceramic molds on Valdéz. Molds have heavy bases, flaring lips, and regular oblong troughs that suggest their use to cast ingots (Hagstrum 1992). Pure copper was still adhering to the insides of several molds, indicating that they were used to make the copper ingots prior to alloying with tin, thus representing an early stage in metal processing (Howe 1992). The broad and even distribution of copper ore across the residential contexts from the settlement of Valdéz suggests that metal processing was conducted within many local households. The copper molds were significantly more common at one household, but this may be simply the result of an admittedly small sample. In any case, the number of the molds

from Valdéz outnumbered those from any contexts at Potrero. The overall ubiquity of the molds was 12.0%. Although no large burning features were described, this absence may simply represent the limited extent of our excavations.

At Valdéz the local population participated broadly in one key step in the manufacture of wealth, namely, the casting of copper ingots.¹ This simple technology took place within local residences. The broad distribution of manufacturing debris shows no association with elite residential area, suggesting little local elite control over the manufacturing process. How then was copper production controlled, if in fact it was controlled? Mining apparently took place in many surface exposures. Many households at the local settlement participated in secondary processing into ingots, using indigenous techniques and technologies of copper extraction and processing.

This dispersed and uncontrolled initial procurement and processing of metal ore may make economic sense. For the comparable case of traditional gold mining in West Africa, local household labor, actually women, independently worked surface mines (Dumett 1993). Since surface mining required large amounts of minimally skilled labor, little advantage, and considerable increased costs, would have been gained by central management. Initial crushing and grinding of the ores used elemental food-processing equipment. The women, with their experience with both food preparation and cooking, had the metallurgy skills in West Africa and worked the metal within domestic contexts. For the traditional West African states, rather than attempting to control initial household metal production, chiefs controlled only the long-distance caravan trade in the finished metals.

Among the Inka in the Calchaquí, a directly analogous situation may have existed. Copper chloride ores would have been mined from surface deposits without complex procedures. Initially, extraction and processing were likely to have been technically simple, taking place within the local households and probably involving domestic technologies such as the grinding equipment and pyrotechnology used in food preparation and ceramic manufacture. Importantly, the metallurgical technology described at Valdéz was the same as that documented for the imperial settlement, Potrero de Payogasta. This comparability of technologies suggests that the local population provided craftsmen and women to work the metals at the state facilities as well.

Lechtman (1979) observed, and Owen (2001; Costin et al. 1989) later confirmed, that the Inka empire is associated with a tin-bronze horizon. Prior to Inka conquest, the alloying of copper was highly variable and local, but following conquest the Inka established a standard for tin alloying. Whatever the stylistic, symbolic, or utilitarian reasons for this alloying, the political effect would have been similar. Tin was more localized in its distribution

(found especially in Bolivia) than the broadly distributed copper. In our study of changing patterns of exchange following Inka conquest in the Mantaro Valley, the main change was the importation of tin ([Chapter 10](#)). Control over the systemwide distribution of tin, therefore, may well have provided the critical mechanism for control over the production of copper wealth objects.

To sketch out how this might have worked for the Calchaquí, it appears as if the primary steps in metal production included the mining of the copper ore and the production of copper ingots. Although we must obtain further documentation, the available evidence for household-level production of the ingots at Valdéz may document production of copper for tribute to the state. Murra (1962) describes how each family was given wool from which it had to produce a certain number of rough textiles for state use. Could this be what we are observing for the household production at Valdéz? The ingots would then have been transferred to the administration settlement at Potrero, where, under close Inka supervision, the copper could have been alloyed with tin and fabrication into finished metal objects. Alternatively the copper ingots could simply have been moved by the Inka for central fabrication near to Cuzco or elsewhere. In either case, the control over the tin would have translated into a control over the production of the metal wealth.

Summary

To summarize the results of the recent research in the Calchaquí, it is important to return to the critical contrast observed in the two parallel projects. In the Mantaro Valley, located in the empire's core where a dense local population existed, imperial finance focused on the development of agricultural production as seen dramatically in the extensive state storage facilities found in the valley. Although finished objects of wealth were quite common in household contexts, evidence for their manufacture was rare.

In the Calchaquí Valley, located on the empire's periphery in a region with relatively low population densities, staple finance seems to have been comparatively undeveloped. No evidence exists for large-scale staple storage. Imperial finance in the Calchaquí focused instead on development of wealth manufacture. Even though finished decorative wealth in everyday contexts was rare, wealth manufacture was apparently quite common. Perhaps delivered as tribute, copper ingots were produced within the households at local settlements; control was exercised in this context by restricting access to tin needed to produce the finished bronze of the Inka empire. The finished metal objects were produced within the administrative settlement and

probably within state facilities elsewhere.

Small-scale decorative wealth was manufactured in the Calchaquí by specialists, who produced beads and bangles from a variety of materials including materials that were obtained from a distance (marine shell) and within the broader region (mica, turquoise, bone, etc.). These specialists were attached to Inka overlords, who had access to imported shell. It seems as if the bead industry was controlled selectively through the foreign goods and their close attachment to Inka residential compounds.

The types of wealth being produced under Inka supervision were apparently not extraordinary or unusual objects. In this regard, they would have been quite different from the special, highly elaborated objects produced by the Danish metal workers ([Chapter 12](#)). I would argue that they were not inalienable objects, closely associated to individuals and circulating in very narrowly circumscribed spheres. Rather, they were probably generic in nature, and most probably exchangeable through local relationships. The development of the attached specialist in the Inka state may thus have been involved in the production of moneylike valuables used in a broad range of payments ([Chapter 8](#)).

To answer the question why did the Inka army conquer the Calchaquí, the conquest appears to have been motivated by the local availability of metals and perhaps of other local resources to use in wealth manufacture. The population's technical experience with metal manufacture would also have been highly desirable. In the Calchaquí, on the periphery of the Inka empire, the state appears to have extracted local metal and perhaps local crafters as tribute. These special materials would then have been fabricated into wealth by local attached specialists working under conditions of close supervision. Both the finished metal wealth and processed materials like the copper ingots could then be exported for use within the imperial economy.

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Exchange and Social Stratification in the Andes

To what extent does control over exchange create a basis for power in prehistoric Andean society? The evolution of social complexity depends partly on control, and control may come from different sources of power that include the economy, military, and ideology ([Chapter 3](#); Earle 1997; Mann 1986). Each society and its factions may use different sources of power combined in different ways, but the basis of control, I would argue, is fundamentally rooted in economic relations (Earle 1997). This chapter investigates how control over exchange helped underpin Wanka chiefs and the Inka state. Almost overnight, when the Inka empire conquered the warring Wanka chiefdoms, they were pacified, resettled out of their fortified redoubts, and integrated politically into the Inka state. How did these dramatic political changes affect the region's economy?

I use the political transformation of the conquest to evaluate theories that relate the organization and commodity flows to a society's resource base and structure. Potentially exchange has different functions in different human societies. Through exchange, households obtain goods that are needed or desired, but that are not immediately available to them. Additionally, leaders and political groups can finance their activities by directing the flow of goods desired by supporters. These general functions, although not mutually exclusive (Webster 1990), represent competing utilitarian (commercial development and adaptationalist) and political models of human economy ([Chapter 6](#); Brumfiel and Earle 1987).

Utilitarian models have a strong adaptationalist logic; they emphasize the role of exchange in meeting household needs. For example, Service (1962) argued that exchange develops to handle local specializations reflecting environmental diversity, and chiefs arise to redistribute the subsistence goods produced by the different communities ([Chapter 4](#)). Substantivists, such as John Murra (1975) and his many followers among Andean scholars (Alberti and Mayer 1974; Masuda et al. 1985), believe that the social economy functioned in the prehispanic period to meet the group's material wants and that the flows of goods were organized according to social relationships. Murra's (1972) vertical archipelago model postulates that the Andes are environmentally varied with different ecological zones corresponding to

changing elevation and to contrasting rainfall patterns such that each zone would produce locally specialized goods for exchange. Formalists would add that the pattern of exchange should correspond to patterns of local production efficiencies and costs of transportation. Utilitarian models predict that prehistoric exchange in the ecologically diverse Andes would be quite extensive and would have increased following Inka conquest as an imposed peace increased opportunities for exchange relationships.

In contrast, the political models emphasize how competing factions and classes manipulate exchange as a means of political power and resistance to that power. Based on desired economic independence, most households may seek a Domestic Mode of Production, such that exchange will be considered a political act. These models emphasize that exchanged commodities should be limited to goods whose production and distribution can be controlled through ceremonial mobilization for feasts (Friedman and Rowlands 1977), long-distance trade in objects of wealth (Helms 1979), and local manufacture by attached specialists of craft and wealth goods (Brumfiel and Earle 1987). Political models would predict that exchange in the Andes would be controlled by political institutions and would have shifted following conquest from control by the local Wanka chiefs to control by personnel of the Inka state. An explicitly political perspective, little used to explain patterns of prehistoric exchange in the Andes (Earle 1985), is the focus of the present chapter.

Changing Extent and Character of Wanka II and III Exchange

To study archaeologically the extent of commodity flows, artifacts have been identified as to their likely source and classified according to zones of procurement, whether local, regional, or long distance (Fig. 10.1; Earle 1985). This simple analysis permits a summary of the extent of commodity flows and how these flows changed with imperial conquest. By considering the types of goods and the social contexts of their production and use, I discuss the probable mechanisms of exchange for the commodities from each zone and how they changed through time. The types of goods used by the prehistoric Wanka have been classified into three overlapping categories: subsistence products, craft goods, and wealth.

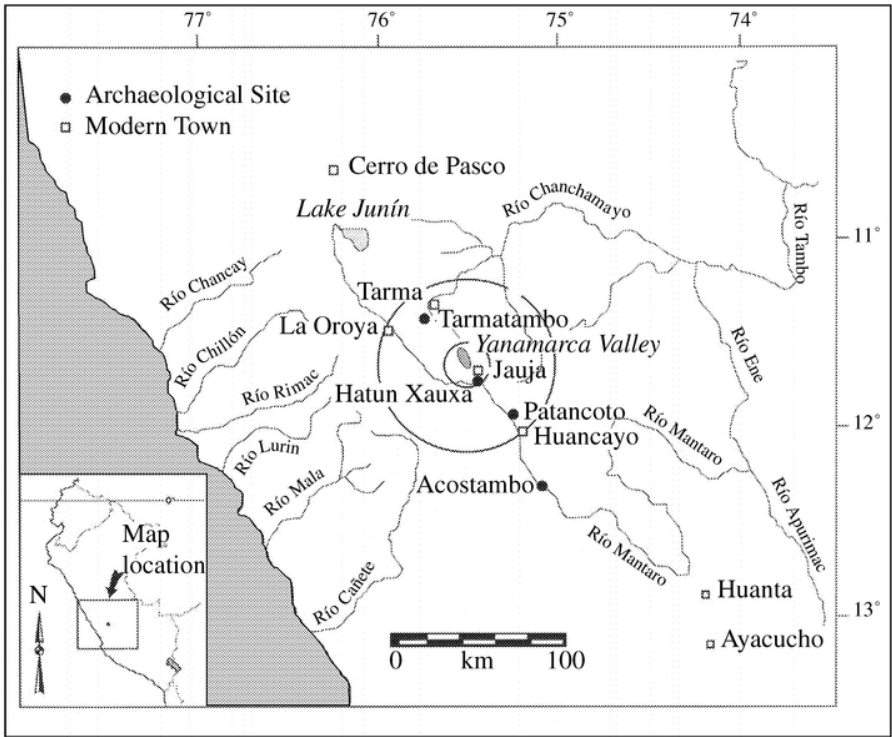


FIGURE 10.1 Map of central Peru, illustrating local, regional, and long-distance exchange spheres.

Subsistence products are food items that must be procured for daily family nutrition. These include crops, domesticated animals, wild plants and animals, and beverages. Some foods, such as maize beer and often meats, are special and served at community feasts. While subsistence produce is typically grown by households for their own use, it may also be mobilized through staple finance to support ruling institutions ([Chapter 8](#)). Subsistence goods can be expected to be generally distributed across all households, but with special goods concentrated in elite contexts because of some advantage over their production and distribution.

Craft goods include a variety of tools and utensils made of ceramic, stone, metal, and other materials and used in everyday life. Employed in food preparation, serving, and manufacturing, these craft goods are used daily but need to be procured less frequently than subsistence items. Craft items may be made of rare material, such as copper, and may be elaborated stylistically in order to carry such information as group or class affiliation, and they therefore grade into becoming items of wealth. Craft goods are often manufactured by part-time or full-time specialists because of economies of scale or needed special technical knowledge ([Chapter 6](#)). Most craft items that are the products of independent specialists are alienable; since they can be traded in normal

exchanges, their distribution should be broad.

Wealth, prestige goods (Friedman and Rowlands 1977) or primitive valuables (Chapter 2), refers to items of personal adornment or display, weaponry, and other items of special symbolic significance (Chapter 14). Although having only limited utilitarian function, they help define a person's social position. Wealth is highly valued, because it is made of rare raw materials, it requires much labor in its making, or the making requires the skills of highly trained specialists. The distribution of wealth can be more easily controlled than the other types of goods and can form the basis for wealth finance (Chapters 8 and 9). These objects are frequently inalienable.

I now consider how the production and distribution of these different goods related to three zones of procurement at increasing distances from the Wanka communities studied. I consider how commodity flows changed, or did not change, from pre-Inka (Wanka II) to Inka (Wanka III) times. Most important are the mechanisms of exchange and their articulation with the alternative utilitarian and political models of exchange in traditional societies. In this Andean case, the limited and highly selective nature of the exchange suggests that the primary motivation for nonlocal exchange was political.

The Local Procurement Zone (<10 km)

The local procurement zone is defined by a 10-km radius around each settlement. Major Wanka settlements are separated by roughly 7 km such that the 10-km radius means that the goods would have come either from the settlement's immediate territory or from a neighboring territory. The vast bulk of all material, namely, the subsistence produce and craft goods, were procured from the local zone. The three mechanisms were likely to have been direct household procurement, simple reciprocal exchange between related households, and feasting mobilization.

Direct household procurement involves the Domestic Mode of Production, as each household attempted to maintain self-sufficiency by producing as much as possible from locally available materials. To a large degree, if a household did not have direct access to a resource, it would replace it with a local alternative. Among the Wanka, self-sufficiency may have been quite feasible. Subsistence products produced and consumed by the prehistoric Wanka included a mixed diet of domesticated crops (tubers, maize, legumes, quinoa) and animals (camelids, dogs, guinea pigs) and some wild foods (especially deer) (Hastorf 1993; Sandefur 1988). All of these foods could have been procured locally, within 10 km of the prehistoric settlements. The food remains that were recovered from individual Wanka settlements vary

according to the productive potential of the 5-km catchment area surrounding the settlements (Hastorf 1993), suggesting immediately local procurement.

The diet was generally similar across the elite and commoner sectors, and diet changed little with Inka conquest ([Chapter 11](#); Hastorf 1993; Sandefur 1988). A few significant differences have been described, and these differences suggest the character of local procurement and exchange. In Wanka II, when settlements were located high on the limestone ridges for defense, potatoes and quinoa were especially important in the diet. In Wanka III, as settlements shifted to lower elevations, food remains, especially in commoner households, came to include more maize that would now have been more available. The desired foods, such as maize and meats, were concentrated in elite patio groups. Evidence for food production, including agricultural tools and butchering implements, was found broadly in Wanka II and Wanka III households, suggesting substantial household self-sufficiency.

The stone industry for everyday use included items such as cobble hammer stones, hoes, and many expedient chipped stone tools for cutting, scraping, and the like. The Wanka procured their stone from local sources, especially the quarry at Pomacancha, where red/brown chert was collected, and the extensive Mantaro Valley gravels, where cobbles of vitreous sedimentaries, volcanics, and quartzite were available ([Fig. 10.2](#); Russell 1988; [Chapter 6](#)). The bulk of the chipped stone industry was manufactured opportunistically from those materials most immediately available. Evidence further shows little change resulting from Inka conquest (Wanka II, 100% local; Wanka III, 97% local). Distance to these primary sources varied according to the specific location of a settlement, and, correspondingly, the percentage of stone resource materials used varied from settlement to settlement. As the distance from a settlement to the Pomacancha quarry lengthened, the percentage of red/brown chert found at settlements declined ([Fig. 10.3](#)). This negative correlation between distance to source and resource use suggests an opportunistic substitution of the gravels for the chert as the cost of getting to the quarry increased.

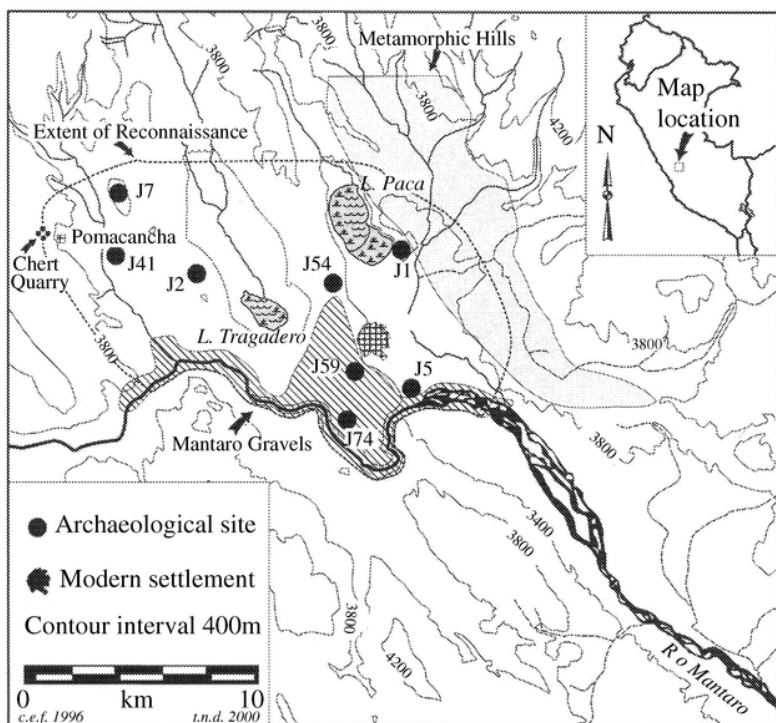


FIGURE 10.2 Map of the distribution of lithic raw materials in the UMAP research area. (Russell 1988)

Direct access to most lithic materials explains the shift in resource use over time. During Wanka II, settlements on the uplands were positioned relatively close to the Pomacancha quarry and the red/brown chert was used generally for chipped stone tools. As settlement shifted to lower elevations in Wanka III, distances to the quarry increased and distance to the gravels declined; correspondingly the percentage of red/brown chert used declined from 57.8 to 37.3% of the lithic industry.

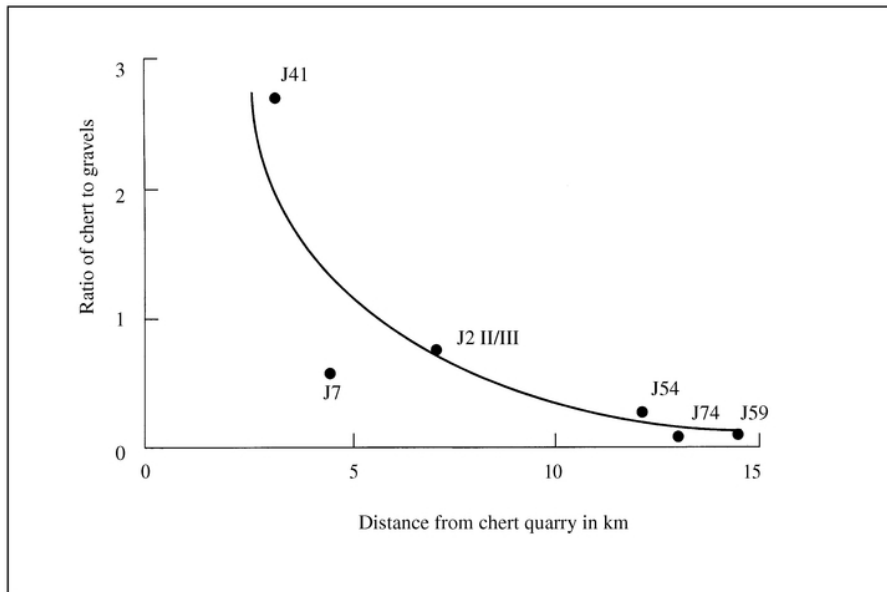


FIGURE 10.3 Percentage of chert graphed against the distance to the chert source, showing the falloff in abundance with increasing cost. This decline represents a classic downward-sloping demand curve.

Other materials that were procured locally included bone manufactured by households into tools and wool from family herds woven into textiles. A wide variety of locally available woods were also used for fuel, tools, and house construction. Interestingly, wood species varied from site to site, perhaps indicating local cultural differences or availability (Hastorf and Johannessen 1991). Hastorf argues for the development during Wanka III of tended groves to provide wood as local woodlands were exhausted.

Local commodity flows involve reciprocal exchanges between people with established social relationships (Sahlins 1972). Such exchanges tend to follow patterns of kinship and marriage and so were probably more common within settlements and between neighboring settlements. Essentially the more intimate the personal relationship, the more simple and direct would be the exchange relationship. Where kinship bonds did not extend, fictive kin relationships of trade partnerships could have been created. Between individuals who trade with each other, reciprocal ties can be created so that they deal with each other as if they were close kin. Such commodity flows would have been decentralized and inherently difficult to control, so that they would have played a relatively small role in the political economies of chiefdoms and states. In the Andes, reciprocal exchanges were apparently responsible for exchange of labor and specialized products among a community's households (Murra 1972; Alberti and Mayer 1974).

Among the Wanka, local commodity flows, as would have involved reciprocal exchanges, were evident in specific craft industries, for which raw resources were highly localized or necessary manufacturing skill levels high (Chapter 6). Localized high-quality chert was knapped into blades at Umpamalca (Wanka II) and Hatunmarca (Wanka III), which were Wanka villages positioned close to the source. The finished chert blades and other tools were then distributed locally in both Wanka II and Wanka III (Russell 1988). This conclusion is documented by the localized evidence for production and the broader distribution for the chert tools discussed in Chapter 6.

In terms of the ceramics, most of the assemblage was locally produced (Costin 1986, 2001), decreasing from Wanka II (92% local) to Wanka III (78% local) as Inka ceramics entered the household assemblages. The Wanka used various ceramic vessels with four characteristic wares: micaceous, local, Andesite, and Inka. The micaceous ware included the ubiquitous, undecorated cooking pot. The local wares included storage jars, serving vessels, and spoons; crude brown or red designs appear on a natural or slipped light background. Both of these wares were most probably manufactured by part-time, village-level specialists and then distributed within local polities (Costin 1986). Evidence for local manufacture of micaceous and local wares includes the distribution of manufacturing debris and local variability in the specific composition of the wares. In both periods, wasters of the local wares (Base Clara and Huanca Red) were concentrated in central settlements that apparently specialized in pottery manufacture. (The elaborately decorated Andesite and Inka wares were, in contrast, produced and distributed on a regional scale.)

Local variants of both the micaceous and local wares have been recognized. In Wanka II, Costin (1986) distinguished two "production groups" of the micaceous ware, the distribution of which corresponded quite closely to the Wanka II chiefdoms of the Yanamarca Valley. One group of micaceous ware was most common in the neighboring sites of Tunanmarca and Umpamalca; the other group was more common at the site of Hatunmarca. The local wares from Umpamalca and Tunanmarca also cluster together and are partially distinguished from the Hatunmarca wares (LeBlanc 1981; Costin 1986). Prior to Inka conquest, the manufacture and local distribution of utilitarian vessels were thus separated into the settlement zones of the warring chiefdoms, and the local exchange took place largely within these political territories. With Inka conquest, in contrast, single production groups are recognized for the micaceous wares and for the local wares, respectively. The imposition of a regional peace and the reorganization of local chiefdoms appear thus to have caused some increased specialization and local exchange in ceramics. As the warring chiefdoms were pacified and reorganized within a single

administrative unit of the Inka state, a single system of commodity flow apparently formed to distribute ceramics.

Local feasting mobilization, important in many chiefdoms such as the Wanka, involved the mobilization of subsistence goods for feasts sponsored by the chiefs. In the Andes, peasant community work teams are associated with special feasts that both reward the workers and mark the status of local communities. Prior to contact, local lords retained lands worked for them by community labor that produced food, which chiefs could use for personal support and support of public feasting (Moore 1958). Other goods were likely provided on an ad hoc basis to support the local ceremonies.

Archaeological evidence of feasting mobilization and of its association with chiefly politics can be ambiguous (Dietler and Hayden 2001), but the concentrations of special foods remains, and evidence for food preparation and serving in elite households, suggest such mobilization among the Wanka (compare Rrumfiel 1987). As among other Andean people, several foods were important culturally and were eaten at feasts, but the pattern of consumption of these foods changed ([Chapter 11](#)). In the Wanka II, maize, which was processed into the fermented drink *chicha*, was recovered almost exclusively from chiefly residences (Hastorf 1990). At this time, the high-elevation location of the fortified settlements such as Tunanmarca meant that lower-elevation land used for maize cultivation was not immediately available. The chiefs would have procured maize either from specially tended fields or through local exchange.

Meat was relatively rare and apparently also involved in feasting. The ritual burials of llama, dog, and guinea pig among the Wanka suggest their symbolic significance, and the grasslands suitable for grazing camelids and the forest edge suitable for deer were not uniformly distributed so that access to them would have varied from settlement to settlement. During Wanka II, camelids and deer were more frequently recovered in chiefly households, where feasts were likely hosted (Sandefur 1988). Concentrated in elite households were the traces of burning and butchering marks on the bones that indicate roasting, a type of food preparation suitable for special meals, rather than boiling, the more common food preparation method (Sandefur 1988). Additionally, high-necked storage vessels, large serving basins, large grinding stones, and cooking pots were also concentrated in elite households ([Chapter 11](#)). We believe that these ceramic forms functioned for the ceremonial preparation and serving of foods at feasts sponsored by elites as a means to establish prestige.

In Wanka III, evidence for local elite mobilization of goods to host feasting becomes less clear. The distinction in food remains between elite and commoner households narrowed. Both maize and camelid meat became more available to all households, reflecting the move in settlements to lower

elevations close to maize fields and perhaps broader access to more distant localities for camelid herding. Deer meat, like camelid, increased in abundance in all households, showing that elites gained no differential access to this wild resource (Sandefur 1988). Other evidence for feasting in elite patio groups appears to decline with the loss of distinctiveness in the local high-necked storage vessels and deep basins, while bone modifications indicative of more elaborate cooking continued to be associated with elite households. Overall it would appear that local chiefs sponsored fewer feasts following the Inka conquest.

To summarize, for the Wanka, the hulk of foods, stone, ceramics, and other crafts used in everyday life were procured locally from immediately available resources. This pattern was unanticipated; the regional environmental diversity in the Andes would seem to have favored exchange. Instead, procurement patterns show a local pragmatism in resource choice; people made do with what was locally available. Only ceramics and special materials for formal tools were exchanged locally, and chiefly involvement in local procurement and exchange was apparently minor, indicating the small advantages and difficulties of control over local production and distribution. The primary exception to this pattern was the concentration of some feasting-related foods and crafts in Wanka II elite households that may have involved the mobilization and gifting of special foods for competitive feasts. Following Inka conquest, changes in diet and craft goods were fairly minor, reflecting primarily the immediately available local material as settlement locations changed. The state appears to have partially coopted feasting from local chiefs to undercut their local power base ([Chapter 11](#)). Though the Inka pacification of the Wanka population evidently increased the local specialization in ceramics to some degree, Inka conquest created few other notable changes. This was a totally unanticipated result of our research, disproving one of our original working hypotheses that the regional peace imposed by the state should have created ideal conditions for rapidly expanding regional commodity flows.

The Regional Procurement Zone (10–50 km)

The regional procurement zone defines an area between 10 and 50 km from a settlement, and it presupposes commodity flows across several local territorial boundaries ([Fig. 10.1](#)). Lacking the close social and economic ties of local communities, exchanges would have involved several intermediaries or regional economic institutions. The upper limit of 50 km is set by the distribution of the ethnic Wanka population through the Mantaro Valley and

adjacent areas. Within the region, only a few kinds of goods were traded, apparently motivated for political rather than economic gains.

The three probable mechanisms of regional commodity flows were simple reciprocal (down-the-line) exchange, staple finance, and a prestige-goods exchange or administered trade system.

Simple regional reciprocal exchange would have been an extension of local procurement practices. If a marketlike system were to have been created, it could well have been through an expansion of these exchanges. In terms of utilitarian craft goods, few items were obtained regionally. The exception was a small amount of stone used for special purposes for which substitution was difficult. Specifically, chert was occasionally traded over distances greater than 10 km, because the properties of Pomacancha chert were well suited to blade manufacture. As settlements shifted to lower elevations and correspondingly were more distant from the quarry, the percentage of chipped stone obtained from greater than 10 km increased somewhat from a trace (Wanka II) to 2.5% (Wanka III). Phyllite, slightly metamorphosed shale, was well suited for large grinding slabs. This material was procured from the met amorphic hills 8-12 km to the east of the Yanamarca and Mantaro Valley settlements under study (Fig. 10.2). No concentrated phyllite manufacturing debris was noted in our excavations, and it was evidently exchanged as finished objects. Among the ground stone assemblage, phyllite constituted 15.1% in Wanka II and increased to 21.0% in Wanka III. However, the amount of ground stone traded regionally actually declined because settlement locations shifted eastward toward the metamorphic hills. The small amounts of red/brown chert and phyllite obtained from greater than 10 km (but not more than 15 km) were procured through reciprocal exchange in ways similar to the local exchange described previously. Procurement of some tropical forest woods used for construction or special technology may also fit into this pattern of procurement (Hastorf and Johannessen 1991). Surprisingly, the imposition of the regional peace did not increase the amount of commodity flows that might have signaled the beginnings of a marketlike system.

Staple finance is an extension of the mobilization used among chiefdoms to support feasts. Previously I described how Wanka chiefdoms mobilized foods locally from their territories to support prestige-gaining feasts. Such feasting continued, although with reduced significance, under Inka domination. Additionally the Inka state mobilized large amounts of foods as part of a massive system of staple finance; Chapter 8 describes the more than 2,000 state storage silos arranged into ordered warehouse facilities on the hills above the Mantaro Valley. We can assume that much of these stores was mobilized from within the region (and beyond the immediate locale) to support the state personnel and facilities at Hatun Xauxa. With Inka imperial conquest, the

primary imposed economic change was this regional system of mobilization.

An important use of these regionally mobilized stores was to support state ceremonies. Morris and Thompson (1985) emphasize that Inka "administrative centers" were first and foremost the state's stage for impressive calendaric ceremonies—large events with copious servings of *chicha*. Concentrated at the center of Huanuco Pampa were high densities of Inka aryballoid jars used for *chicha* storage. The enormous central plaza at Hatun Xauxa was said to hold a gathering of 100,000 people (Estete 1917 [1532-1533]: 96-97), which would have been most of the population in the Wanka region (LeVine 1993). The concentration of liquid storage vessels at Hatun Xauxa (D'Altroy 1992) and the maize-enriched diet of Wanka III males (Hastorf 2001), who apparently were "eating out" for a significant proportion of their meals, suggest the importance of state-sponsored feasting. The support of massive ceremonies was part of the state's broader control over cultural production functioning to legitimize the state's hegemony (Chapter 14).

The contrast between local feasting mobilization as seen in Wanka II and the regional staple finance system of Wanka III can be interpreted as a massively increasing scale of mobilization engineered by the state as a means to finance its extensive regional operations. During Wanka II, feasting apparently involved the mobilization and distribution of special foods from the local population. Control by chiefs is suggested by the concentration of evidence for the feasting in elite patio groups. During Wanka III, however, the state greatly increased the scale of mobilization for the support of its own activities and special ceremonies.

Prestige-goods exchange and administered trade were the likely mechanisms by which to move wealth (namely, prestige goods or primitive valuables) through the Mantaro region. Prestige-goods exchange involves the exchange of status-defining objects between elites as a means to establish political alliances and build personal prestige (Friedman and Rowlands 1977). Administered exchange in states (Polanyi 1957) represents broadly instituted exchanges of similar goods with the purpose of providing special objects as gifts or political payments. Both are examples of wealth finance (Chapter 8).

Throughout the Andes, gifting of valuables was important to build social relationships and personal prestige, and the Mantaro Valley was no exception. Two classes of special craft goods (highly decorated ceramics and metal tools) document regional exchange of finished goods and raw materials. In terms of frequency, most important were the elaborately decorated Andesite and Inka ceramics. The Andesite and Inka wares included large storage and serving vessels that were elaborately decorated. The Andesite pieces were often decorated with modeled faces and tricolor painting, characteristic of the Wanka. The Inka pieces included aryballoid storage vessels in the standardized

imperial style. The manufacture of these special forms evidently required extensive labor investment and the production skills of attached specialists (Hagstrum 1986). These regional wares, with their special vessel forms, represented a fairly small percentage of ceramic assemblage that increased over time with the introduction of Inka ceramics (Wanka II, 7% regional; Wanka III, 22% regional).

The Andesite vessels have been found in a broad region stretching from Huanta in the south (Costin 1986; Lavallee 1967) to Tarma and La Oroya in the north (Hastings 1985). Unlike the locally produced wares, Andesite shows little stylistic variability across its wide region of distribution. Costin (1986: 483-490), using detailed analysis of manufacture and materials, showed that the Andesite ceramics from within the Yanamarca study area and from distant locations formed a single production group. Although the location of Andesiteware manufacture has not been determined definitively, it is unlikely to have been in the Yanamarca Valley settlements. No concentrations of wasters have been recognized in the ceramic assemblages of our study area. The most likely locality for manufacture was in the lower Mantaro Valley, perhaps the large settlement of Patankoto, where Andesite ware is abundant in the archaeological collections (Fig. 10.1). If Patankoto were the manufacturing location, the special Andesite vessels from the Yanamarca were procured from a source nearly 50 km away. In Wanka II, Andesite constituted 6.9% of the assemblage, decreasing slightly to 6.4% in Wanka III.

The Inka wares were found only in the contexts of Wanka III, the Inka period in our sequence. In the Mantaro Valley, Inka ceramics comprised 15.2% of the assemblage, found broadly in Wanka III settlements, but concentrated in elite contexts. Hagstrum (1986) has argued that, based on standardization and labor investment, these ceramics were manufactured under close imperial supervision. Imperial involvement in the production and regional distribution of Inka ceramics is discussed by Costin (1986: 491-500) and D'Altroy and Bishop (1990).

The analysis of regionally exchanged ceramics shows some important patterns. In Wanka II, the Andesite vessels (and more generally the most elaborated local vessels) were concentrated in elite patio groups; in Wanka III, these elaborate Wanka vessels were no longer concentrated in elite contexts (Costin 1986). As status markers, the decorated Wanka wares were replaced by the Inka vessels. Assuming that Inka vessels, which define and display status, were used during public events, the local chiefs continued to have access to the status-marking goods under the Inka, yet with conquest, their style shifted from local Wanka types to Inka types (Chapter 11). The regional commodity flows of Wanka II no doubt involved horizontal network relationships among the chiefs through the region, replaced in Wanka III by the vertical exchange

relations between Wanka chiefs and the state (Costin 2001). The power derived from the meaning in the style shifted from regional interelite alliances to state affiliation.

For both Wank'a II and Wank'a III, metal objects were also concentrated in elite patio groups and were elements of wealth both as utilitarian and display forms (Owen 2001). Metal tools, manufactured from copper and lead, were regionally procured. Although these metal tools represented a small percentage (less than 1%) of all the tools used by the Wanka, they were of unusual value and carefully curated, appearing often as burial offerings (Earle et al. 1987). Most frequent were simple needles recovered from both time periods; during Wank'a III, additional tool types included chisels, *tumi* knives, *bolos*, and axes. Although always rare, metal tools increased significantly in frequency from Wank'a II (ubiquity 0.5%) to Wank'a III (ubiquity 2.6%)(Owen 2001). The copper and lead used in these tools were derived from mines in the Mantaro region to the northeast and northwest of the Yanamarca Valley, but beyond the 10-km local catchment of the Wanka settlements under study (Fig. 10.1).

Items of decorative wealth, especially objects of adornment made from special materials, included metal (silver, copper, and occasionally gold) and special stones (turquoise, talc schist, mica, and quartz crystals). Metal items included *tupu* pins used to secure a woman's shawl and small disks sewn on clothing; stone items included beads and pendants. Such objects are rare; they appear especially in burials or caches. Decorative metal wealth was strongly concentrated in the chiefly households during both time periods and presumably served as status markers. Silver items were fairly common in Wank'a II and remained little changed into Wank'a III; copper items increased with Inka conquest, a point to which I return.

Objects of decorative wealth, like beads and pendants, were occasionally made from regionally available stone such as the copper-related turquoise. Additional items include things such as a rare stone figurine, sheet mica, or quartz crystal, which likely had specific magico-religious significance. Based on geological evidence and the materials survey conducted by Russell (1988), most stone valuables derive from the metamorphic hills located to the east of the Yanamarca (Fig. 10.2). Counts are too small to determine changes from Wank'a II to Wank'a III.

Wealth would have included the fine textiles so valued in the Andean world (Murra 1962). Based on historic evidence, fine cloth was evidently manufactured at the Inka administrative center, Hatun Xauxa (Cieza 1984 [1551]), from where it would have been distributed regionally or shipped to Cuzco. Because of problems with preservation, archaeological evidence for the textiles is virtually nonexistent in the highlands, and little more can be said.

To summarize, regional commodity flows were relatively minor despite

great contrasts in local environments. Furthermore, following Inka conquest, no general expansion of utilitarian commodity flows took place, despite conditions of peace that would appear to have decreased transaction costs significantly. The highly selective changes in the types and amounts of goods flowing regionally reflect strongly political motivations of exchanges. In Wanka II, regional commodity flows involved chiefly exchanges of prestige goods at ceremonial events. In Wanka III, the Inka state implemented changes as part of explicit strategies of finance and control. The state instituted the regional mobilization of staples for finance and imposed administrative control over production and exchange of the status-defining goods for the local leadership (Chapters 9 and 11).

The Long-Distance Procurement Zone (>50 km)

In the Mantaro, commodity flows from distances greater than 50 km presuppose movement across ethnic boundaries and natural regions (Fig. 10.1). To realize long-distance commodity flows in any volume would have required either administered or entrepreneurial traders. The types of goods moving long distances into the Mantaro Valley were surprisingly limited in volume and restricted in character. Almost no food or craft goods come from any distance. Goods are primarily wealth objects of metal and shell. In the Andes, long-distance exchange has been best documented for tin (Lechtman 1979) and *Spondylus* shell (Paulsen 1974). The character of long-distance commodity flows into the Wanka emphasizes its strongly political character.

Despite the fact that the tropical forest, with its rich array of fruits and special foods, is little more than 50 km to the east, no tropical environment foods were recovered in our samples. The only movement of plant resources seems to have involved limited amounts of wood (for construction?) and drugs. Charcoal from tropical trees has been identified (Hastorf and Johannessen 1991) and this may have been imported for special construction. Coca was important in Andean ritual, although high elevations precluded that it be grown locally in the Mantaro Valley. An account describes a Wanka chief's coca fields tended for him in the montana about 40-50 km to the east of the Yanamarca Valley (LeVine 1979). Such procurement from a distance must have existed for this ceremonial product. Archaeological evidence of coca is rare, but two endocarps from a coca variety grown in the eastern forest zone were recovered from Wanka II elite patio groups (Hastorf 1987).

Procurement of craft goods from long distances was remarkably limited in both periods. The only long-distance lithic exchange would seem to have been for Quispisisa obsidian, a source located approximately 150 km to the south in

Huancavalica (Burger and Asaro 1977). The sharp edge of obsidian makes it especially desirable for controlled cutting as would be required in specialized manufacture. In Mesoamerica, its exchange and use were broadly spread through prehistory (Hirth 1984). When we initiated UMARP (Upper Mantaro Archaeological Research Project), the involvement of the chiefdoms and state in obsidian trade seemed reasonable, and I anticipated a marked increase in exchange following Inka conquest because of either direct state involvement or expanding trading opportunities with the imposed peace. It did not happen.

Obsidian was very rare in the Mantaro sites and did not increase significantly following Inka conquest. In all our excavations, we recovered only a handful of pieces, representing a trace (0.06%) of the lithic assemblage. Interestingly, many obsidian samples showed multiple hydration readings, suggesting flaking on individual pieces at two different times, one contemporary with the Wanka settlements being excavated and the other of an earlier date. These multiple dates from single pieces suggest that much of the obsidian found in late prehistoric contexts was locally scavenged from material imported into the Mantaro at an earlier time (Russell 1988). The extremely limited long-distance lithic exchange is counter to utilitarian expectations.

The long-distance exchange of ceramic vessels was also of little importance in the Yanamarca, but it follows a pattern similar to the regionally exchanged ceramics. A scattering of pieces contrast in style and composition with the Wanka ceramic inventory and have been classified "foreign" and thus part of long-distance commodity flows. In both periods this category of goods is a very small percentage of the ceramic assemblage, decreasing from 0.5 to 0.2% following Inka conquest.

The few items identified as coming from a long distance were among the more elaborately decorated pieces but with distinct wares and styles not associated with Wanka types. Most exotic ceramics in Wanka II have not been identified as to area of origin; a few are of the San Bias types coming from the Junin *puna*, 50 km to the north. During Wanka III, at least one example of imperial Inka appears to have been imported to the Mantaro from Cuzco (D'Altroy and Bishop 1990). This specialty piece was an elaborately decorated plate, obviously used in serving and display. A few Chimú sherds, imported from the north coast of Peru, were also found in elite Wanka III contexts.

In the Late Horizon, the most significant long-distance exchange material was tin alloy with copper to create a true bronze ([Chapter 9](#)). The tin must have been imported from the distant mines of southern Peru or Bolivia. Tin was absent in the analysis of Wanka II metals but was found in all finished Wanka III coppers analyzed. With seven objects, tin represented a mean of 5.2% (range 2.0-8.0%) of the metallic composition (B. Owen, personal communication). Lechtman's description of the Late Horizon as a "tin horizon"

in metallurgy fits comfortably with the Wanka data (Costin et al. 1989). The imported tin increased the working quality of the copper tools described, but the uniform, and empirewide, shift to tin alloy suggests additionally that the Inka state encouraged and controlled long-distance trade and distribution in the tin. By this intervention, the state would have controlled the manufacture of the metal tools ([Chapter 9](#)).

In terms of wealth, the addition of tin to copper ornaments is a further indication of state control over the production and distribution of these valued objects. Essentially, the addition of tin to the copper tools could be explained on utilitarian grounds, but the use of the tin in the items of adornment suggests that the state administered their manufacture and distribution.

Other valuables involved in long-distance commodity flows included the beads and pendants of shell. Shell remains were found in a consistent number of excavated proveniences (Wanka II, 1.1% ubiquity; Wanka III, 1.5% ubiquity). The shells come from a variety of Pacific Ocean species. Most, such as *Oliva*, *Thais*, and *Spisula*, have a broad distribution along the Pacific Coast, which is 250 km to the east ([Fig. 10.1](#)); in both Wanka II and Wanka III sites, single pieces of *Spondylus* came from coastal Ecuador 1,500 km to the north. In two Wanka II patio groups, shell beads made from the lip of a large land snail were also recovered; although species identification is not possible, these derive from a tropical forest species, coming from the east. Despite the broad-scale integration of the Inka empire, exchange of the shell was constant before and after conquest.

The most probable mechanisms of long-distance commodity flows were: in Wanka II, prestige-goods exchange managed by local chiefs, and in Wanka III, administered exchange managed by Inka personnel. Both served primarily political rather than utilitarian functions. In Wanka II, commodity flows in coca, special ceramics, and shell were most likely controlled by the chiefs, who could then have controlled their distribution and display to establish and maintain ascendant status. Commodity flows in craft goods were very limited, emphasizing the lack of a developed marketing system (LaLone 1982; Earle 1985). With the imposed Inka peace, long-distance exchange was little affected. Among utilitarian goods, only the tin alloying suggests an increase in long-distance exchange, but this must have been handled by a state-administered trade.

Conclusions: The Extent and Character of Prehistoric Exchange

The Inka empire and the Wanka chiefdoms that the empire conquered were highly complex societies and polities. We expected to find evidence of flourishing mercantile activities. Exchange should, we thought, have spread to integrate specialized communities with different local resources and expertise. Although the commercial development and adaptationalist models offer a good framework to understand the specific cases of specialization, they failed to explain the overall low commodity flows late in the prehispanic periods of the Mantaro Valley ([Chapter 6](#)). Most notably these utilitarian models failed to account for a simple fact: The imposition by the Inka of widespread peace did not expand commodity flows through the region.

[Figure 10.4](#) summarizes the relatively low and unchanging commodity flows described archaeologically for the Mantaro Valley. Not shown by the chart is the fact that, from left to right, the overall volumes of goods consumed were proportionately much less, by orders of magnitude. To the left are the subsistence items (plant and animal food) and craft items (lithic, ground stone, and ceramics), both of low value to their bulk; to the right are the higher-valued tools and decorative items of metal and shell. Foods, for example, would have been consumed daily in substantial amounts, whereas shell objects would have been obtained only rarely and carefully curated for many years. The vast bulk of goods consumed by the Wanka were the foods and the crafts that were locally procured, and this pattern did not change with conquest except for routes of access. As described in [Chapter 8](#), a substantial proportion of the staples would

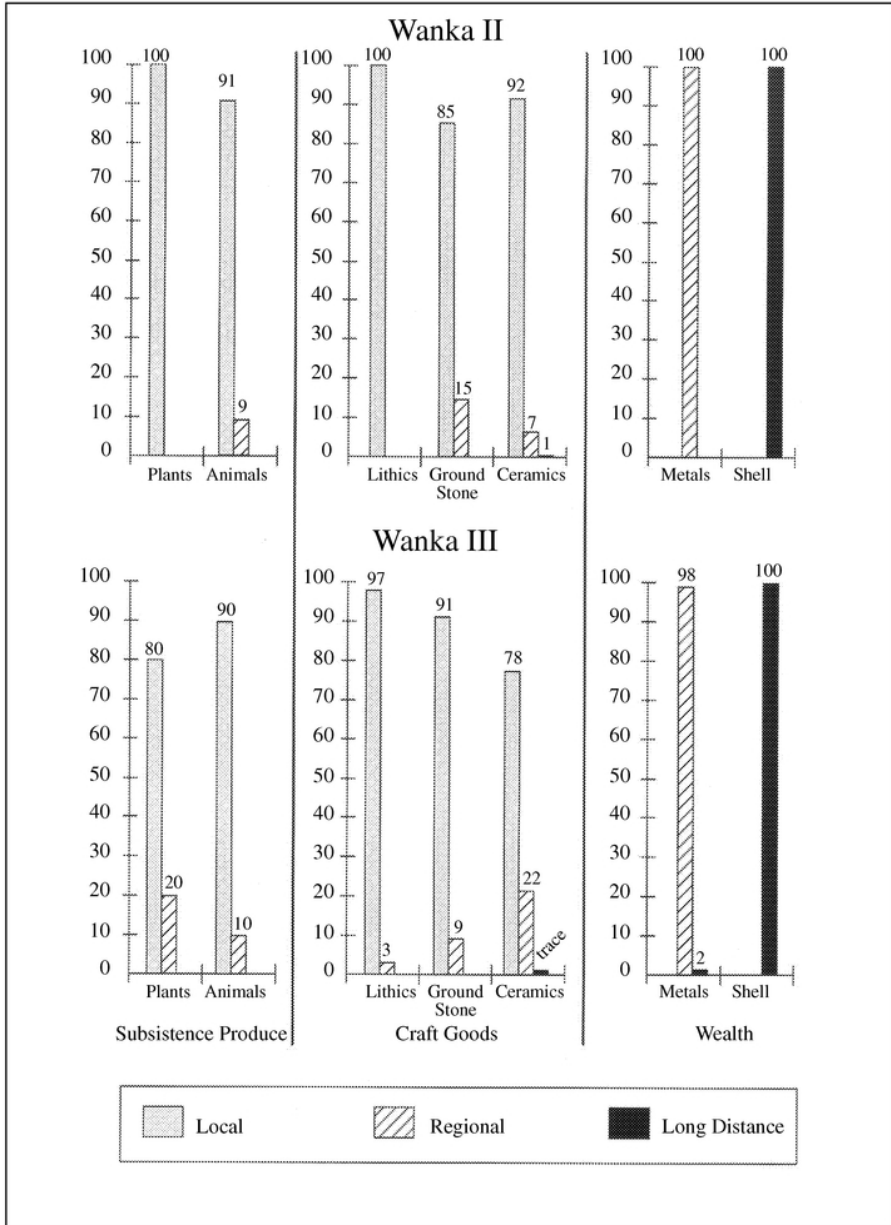


Figure 10.4 Comparison of Wanka II and Wanka III artifact classes considering distance of procurement.

have been mobilized by the state, only to be paid back to the locals when they worked on state projects.

Regional and long-distance commodity flows were confined to goods of high value, moved in low volumes. The Andes region had a nonmarket economy (Earle 1985; LaLone 1982; Murra 1980 [1956]), and the commodity

flows that we have documented involved controlled substances used for political purposes. The lack of an increase in exchange following Inka conquest emphasizes how the state restricted horizontal relationships among conquered populations and emphasizes the vertical dependency of the vanquished on the state (Costin et al. 1989; Earle 1985). Commodity flows outside of the local area were largely restricted to political strategies for control and finance. In Wanka II, exchange involved the mobilization of goods used in feasting and the selective regional and long-distance exchange in wealth. This pattern fits the expectations of Friedman and Rowlands's (1977) model of prestige-goods exchange. Emerging elites manipulated trading networks to extend political power through horizontal alliances. At least some of the goods, including gold and silver (Lechtman 1984) and the quartz crystals, were connected to magico-religious properties and to esoteric knowledge that would also have legitimized the elites' sacred rights to rule (Helms 1979). In Wanka III, the conquest and imposition of the Inka imperial system continued the political character of commodity flows at a distance. The exchange of wealth in the prestige-goods exchange was selectively transformed to emphasize the specific goods (most obviously the metals and state ceramics) that were controlled by the state and referred symbolically to uniform state styles.

Although exchange in the late prehistory of the central Andes provided for certain utilitarian needs, it played a comparatively minor role in Wanka life. This picture reinforces the established view that the Andean economy was not market oriented, but it appears to have been largely characterized by the absence of exchange as well. The lack of exchange reflects the distinctly political character of Andean exchange, administered by chiefs and transformed by conquering state rulers.

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Status Distinction and Legitimation of Power as Reflected in Changing Patterns of Consumption in Late Prehispanic Peru

Among societies with a full range of social complexity, consumers make choices about what they will use in their daily lives. Considerations are made within a framework composed of economic, social, and political criteria, as well as elements of personal preference, but we argue that the aggregate choices seen in the archaeological record reflect dominant processes within the prehistoric society. For example, in foraging societies, least-cost models, which are primarily economic in scope, have proven to be effective in explaining the kinds and mixes of resources utilized (Earle and Christenson 1980; Winterhalder 1981). In sedentary village-level societies, choices appear to reflect not only economic criteria, but also social concerns, as the consistent use of certain items reflects group affiliation and social process (Hodder 1983). In more complex stratified societies, yet a third set of considerations is added to consumer decisionmaking. These considerations reflect the dynamics of control, finance, and legitimation within the political economy (Chapter 3; Earle 1997). Differential access to certain goods confers real economic power and legitimizes existing social hierarchies in stratified societies. Therefore, patterns of consumption in chiefdoms and states reflect the developing structure of political power and economic control. These patterns should reveal both the economic and ideological bases of elite hegemony, reflecting how elites control a subjugated population, finance their activities to maintain status distinctions, and justify the social differentiation to themselves and the underclass.

A primary concern of emerging states is to maintain control over subject populations. In this chapter, we will discuss the economic and political change initiated by the Inka empire as part of imperial strategies to create and maintain state domination over the Wanka, one of the 80 conquered ethnic groups that made up the empire. Three critical issues arise: (1) How did the Inka state maintain political control? (2) How did the Inka state finance itself? and (3) How did it justify its supremacy and create a loyal populace out of the

polities it conquered? As we demonstrate, Inka strategies of control, finance, and legitimation are reflected in changing patterns of local household consumption.

Three complementary strategies are available for the maintenance of social control in complex societies such as the Inka empire (Haas 1987). The first is the monopolization of force. The Inka state ultimately depended for control on its mobile and regimented military force (Rowe 1946; Schaedel 1978); however, because of the expense to maintain a military force, control also depended on a balance of economic and cultural relations that bound the local population to the state (LaLone and LaLone 1987; Silverblatt 1988).

Second, the issue of control is linked intimately to finance. Control over finance translates into control over the political process. The evolution of complex social forms such as chiefdoms and states depends on the development of new finance systems to support the new institutions of government, military, religion, and social stratification ([Chapter 8](#)). The Inka state, typical of an Oriental Mode of Production (Marx 1964), mobilized resources through a system of staple finance. Agricultural products from state lands and utilitarian items produced by local craftsmen filled the extensive Inka warehouses, as seen dramatically at the administrative centers of Hatun Xauxa, Pumpu, and Huánuco Pampa (D'Altroy 1992; LeVine 1985, 1993; Morris 1967), and directly were used to support those working for the state. In addition, craft specialists attached to the state manufactured objects of wealth that included metals, textiles, and fine ceramics ([Chapter 6](#)). These objects, distributed to state personnel and local leaders, were badges of office signifying specific rights to resources and labor service and perhaps served moneylike functions ([Chapter 8](#)). Often symbolically linked to the gods, these special objects also legitimized existing patterns of domination and control. Their distribution reflects changing forms of alliance and prestige. In this chapter, we discuss how state mobilization and distribution of locally produced goods affected consumption patterns of those commodities among the local populations.

Third, just as control is connected intimately with finance, so too are control and legitimation linked (Earle 1997). Clearly, an elite cannot maintain power efficiently if the bulk of its subjugated populace views their rulers as illegitimate. Therefore, we expect the Inka to have developed strategies to legitimize their rule. In an insightful analysis of the Aztec empire, Kurtz (1978) argues that states move to legitimize their rule in three ways: (1) they establish a legal and divinely sanctified basis for their domination; (2) they centralize and consolidate power in order to neutralize the independent power of local groups; and (3) they employ benevolent acts and the controlled dissemination of information to socialize and educate the population. Of course, none of

these strategies can be activated without significant financial backing.

We demonstrate below that the Inka empire used policies and actions similar to those outlined by Kurtz to legitimize their power. As discussed in [Chapter 14](#), the state was able to control the production of its ruling ideology by materializing concepts with the material objects. These state strategies to control consumption are evidenced archaeologically in changing patterns of household consumption (see Conrad and Demarest 1984; Morris 1982; Rowe 1982; and Silverblatt 1988 for discussions of ethnohistoric data relating to Inka strategies of legitimation). Most fundamentally, the distribution of many items of material culture indicates that the Inka appear to have undercut local elite power, usurping control over the economic basis of power and acting to transfer the loyalty of the population directly to the state.

To evaluate the shifts in consumption that reflect Inka tactics of legitimation and power consolidation, we examine recent archaeological data collected by the Upper Mantaro Archaeological Research Project (UMARP) in the high intermontane Yanamarca region around the modern town of Jauja ([Fig. 11.1](#); Earle et al. 1987). We contrast household consumption from Wanka II (A.D. 1350-1460), immediately prior to the Inka conquest, and Wanka III (A.D. 1460-1533), under Inka domination. The Wanka of the Yanamarca Valley were united administratively with their ethnic brethren in the Mantaro Valley to form a single provincial unit, Wanka Wamani, and local elites were recruited into the Inka bureaucracy.

We excavated at a sample of both large and smaller settlements that had been occupied during each period. The basic unit of excavation and analysis was the patio group, thought to represent a household. Each patio group consists of one or more circular stone structures facing onto a walled patio space. Analysis of the artifacts recovered suggests that patio groups had a domestic function. All yielded evidence of food preparation, consumption, and some storage; this includes hearths, cooking pots, storage vessels, grinding equipment, bowls, and burned bone and carbonized plant remains. Evidence of household-based production includes agricultural tools such as hoes, lithic-manufacturing debris, ceramic wasters, and spindle whorls. In the analysis, we consider each patio group as an individual economic and residential unit. Importantly, the patio-group unit with its suite of domestic artifacts is found at all community types in both time periods.

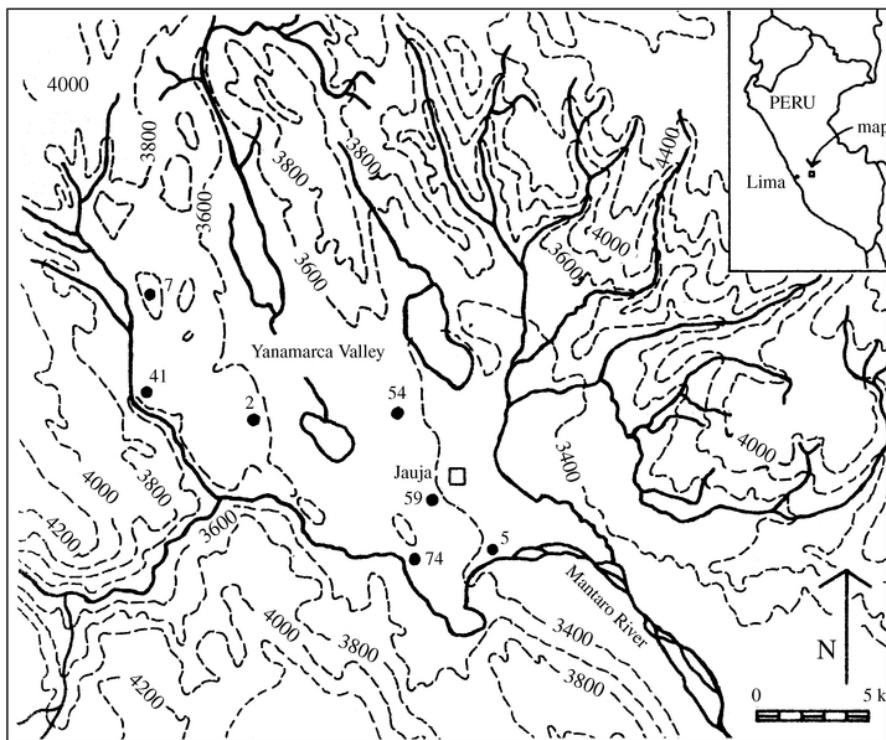


FIGURE 11.1 Map of Wanka II and III sites excavated by UMAPR and used in the analysis of household differentiation. The modern town of Jauja is designated by a square. Archaeological sites are designated by dots: (2) Hatunmarca; (5) Hatun Xauxa; (7) Tunanmarca; (41) Umpamalca; (54) Marca; (59) Wankas de la Cruz; and (74) Chucchus. (after Earle et al. 1987: Fig. 1)

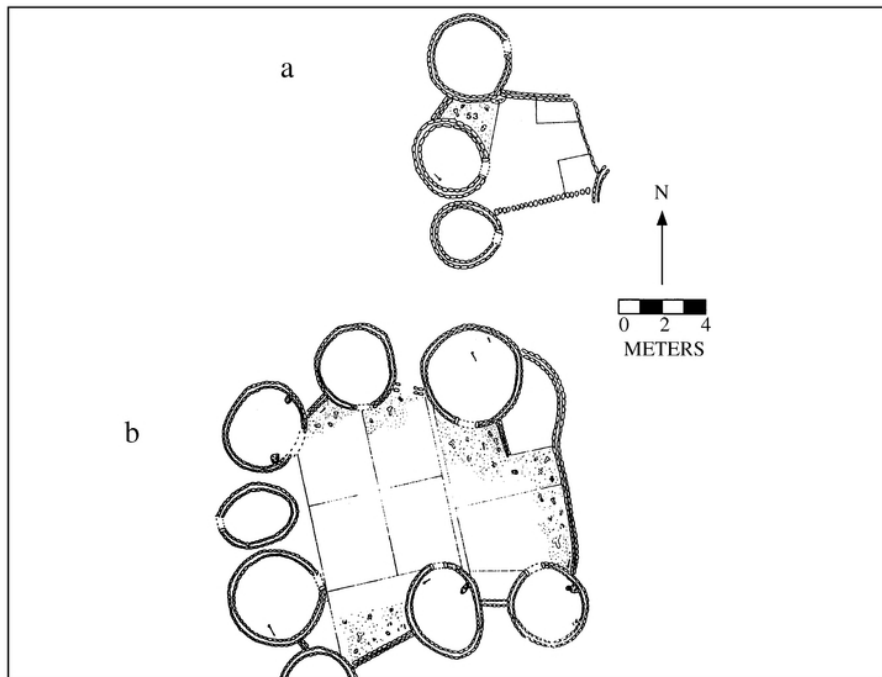


FIGURE 11.2 Comparison of elite and commoner patio group at Tunanmarca. (a) Commoner household 7=9; (b) elite household 7=2. (after Earle et al. 1987: Figs. 5 and 15)

Prior to excavation, we classified patio groups as either commoner or elite on the basis of their proximity to the central plaza, quality of the masonry, number of structures, and the size of structures and the patio area (Fig. 11.2). After excavation, we tested our assignments based on the differential distribution of artifacts recovered from the households, and all but one were confirmed. No extensive survey was undertaken to calculate the relative proportions of elite and commoner households. At Tunanmarca, the only site for which we have data, roughly 5 to 7 percent of 67 patio groups analyzed had significantly greater patio area and/or larger numbers of structures. Our working assumption is that 5 percent of all patio groups would have been occupied by elites, with slightly larger proportions at centers and slightly smaller proportions at dependent communities.

Households were chosen for excavation by random and judgmental procedures (Earle et al. 1987). Twenty-nine households were excavated, distributed among the sites in proportions roughly consonant with individual site sizes. The sampling fractions of patio area ranged from 9 to 100 percent, and the total volume of matrix removed ranged from 3.3 to 20.3 m³ per patio group (Earle et al. 1987: Table 3). Two patio groups from Hatunmarca had multiple components, yielding both Wanka II and Wanka III materials. In sum, we had 31 analytic units. The sample consisted of 7 Wanka II elite patio

groups, 10 Wanka II commoner patio groups, 6 Wanka III elite patio groups, and 8 Wanka III commoner patio groups. All reported data were recovered from occupation contexts (including middens [generally located in patio corners], floors, and activity areas and excluding fill, wallfall, and mixed and disturbed contexts). Because of the short occupation in both periods, deposits generally were undisturbed. We have little evidence for reuse of abandoned structures for dumping and, with the exception of the two multicomponent households at Hatunmarca, little evidence for remodeling and rebuilding.

Before proceeding, a comment about the data presentation is required. Each data set is presented in a slightly different manner. The rationales for these standardization techniques have been discussed in detail elsewhere (Costin 1986; Russell 1988; Sandefur 1988) and will be summarized briefly here. Ceramics are presented as mean grams recovered per cubic meter excavated (g/m^3). Weights, rather than counts, are used because sherds recovered from sites that currently are under cultivation were consistently and significantly smaller than sherds recovered from sites that have never been farmed. Data are standardized by excavation volume to eliminate the biases that would result from unequal amounts of excavation at different patio groups. Faunal data are reported similarly as a density figure (kg/m^3). Bone counts first were transformed into minimum numbers of individuals (MNI), meat weights were calculated from the MNI figures, and, finally, kilograms of meat were standardized by excavated volume. Metal and shell objects were too rare to be characterized accurately by density, and a ubiquity measure was chosen. Ubiquity (or percent present) measures the frequency of occurrence, rather than overall abundance. It is expressed as the percentage of sampling units (in our case, separately excavated stratigraphic units, which we call "loci"; Earle et al. 1987: 14) in which a particular artifact type was recovered. Botanical remains are presented as ubiquity because this type of analysis helps to control for differential preservation and permits comparisons among different cultural contexts as well as intersite comparisons (Popper 1988). The statistical significance of distributions presented as standardized densities was analyzed using t-tests calculated on status means for each period. The statistical significance of distributions presented as ubiquity was measured using a two-tailed chi-square statistic, testing the hypothesis that commoners had significantly different numbers of objects than did elites.

The analysis of artifacts from the patio excavations serves to evaluate how consumption changed from Wanka II to Wanka III and how this may relate to significant state intervention into local economic and social behavior. We show the nature of control, finance, and legitimation before and after Inka conquest by comparing the distributions of three classes of goods found within Wanka households. Following Smith (1987), we divide the relevant data into three

classes ([Chapter 10](#)). First, high-value foods are those apparently preferred for nutritional and/or symbolic reasons. In our area, these include maize and most meat products, especially camelid and deer.

Second, we look at high-value utilitarian craft items. These goods are used on a regular basis in household-maintenance activities. They derive their high value from the amount of labor invested in manufacture, distance from their original source, and/or the degree to which their distribution was limited and/or controlled. The primary examples consist of decorated ceramic storage and serving vessels manufactured locally or within a 50-km radius of the study area. These goods were important not only for their symbolic value, but also for their roles in storage (finance) and ceremonial feasting (legitimation). Additional examples include copper tools such as needles and chisels.

Third, some craft items are considered nonutilitarian wealth items in that they did not have a daily role in household maintenance. In our area, the primary examples consist of ceramics imported from long distances, marine shell, and decorative metal items such as *tupus* (pins) and small disks that were sewn onto clothing. One class of items that unfortunately cannot be discussed here is textiles. These items, highly valued in Andean societies, are not preserved in our study region.

These three types of materials are important for two reasons. First, they are all items that function directly as both stores of value and as symbols of power, status, and control. In addition, the differential distributions of many of these items reflect differential participation in certain activities that were associated with power, status, and control within Wanka and Inka societies.

Access to Preferred and High-Valued Goods

Preferred Foods

Looking first at foods, elites consumed more of locally preferred items. During Wanka II, this is particularly evident in the concentration of maize in elite households. We recovered significantly more maize from Wanka II elite contexts (ubiquity = 45 percent) than from commoner contexts (ubiquity = 12 percent; [Fig. 11.3](#)). During Wanka II, settlements generally were located on high ridges, well above the upper limit for maize cultivation. The maize, therefore, must have come from specially tended fields, from distant fields, or from exchange (Hastorf 1993). In addition, elites had a higher maize-kernel-to-cob ratio than did commoners, suggesting that shelled maize, rather than

unprocessed cobs, was brought into elite households most often (Hastorf 2001). Special agricultural products—such as chili peppers (*aji*), coca, and tobacco—have so far only been found in elite households. Since these items were not grown locally, they probably were imported from the tropical forest about 50 km to the east.

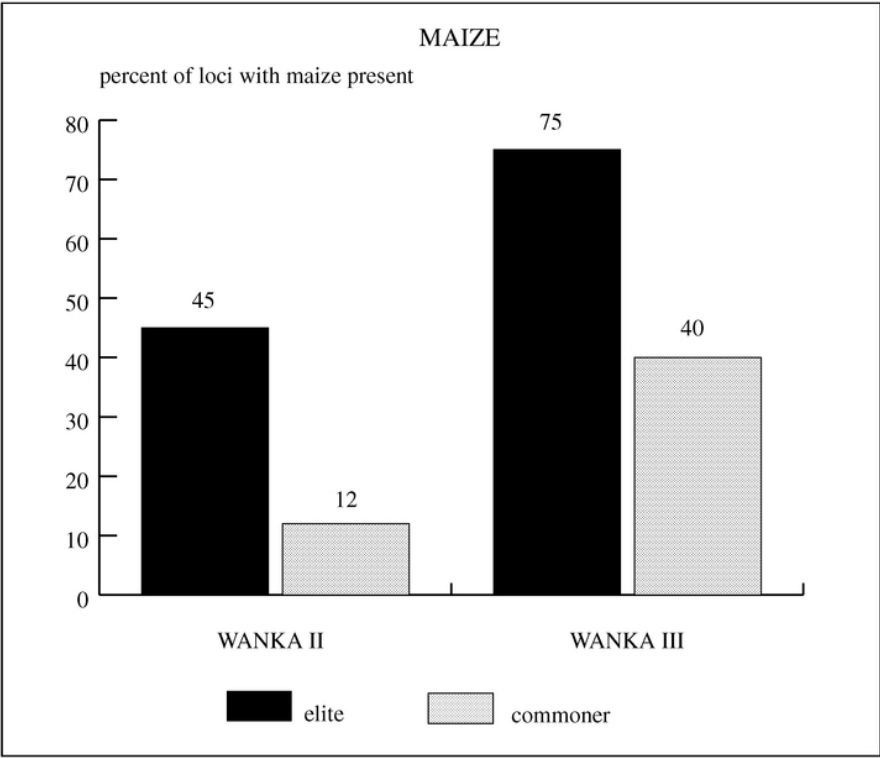


FIGURE 11.3 Bar chart illustrating the contrasting ubiquity of maize by status in Wanka II and Wanka III.

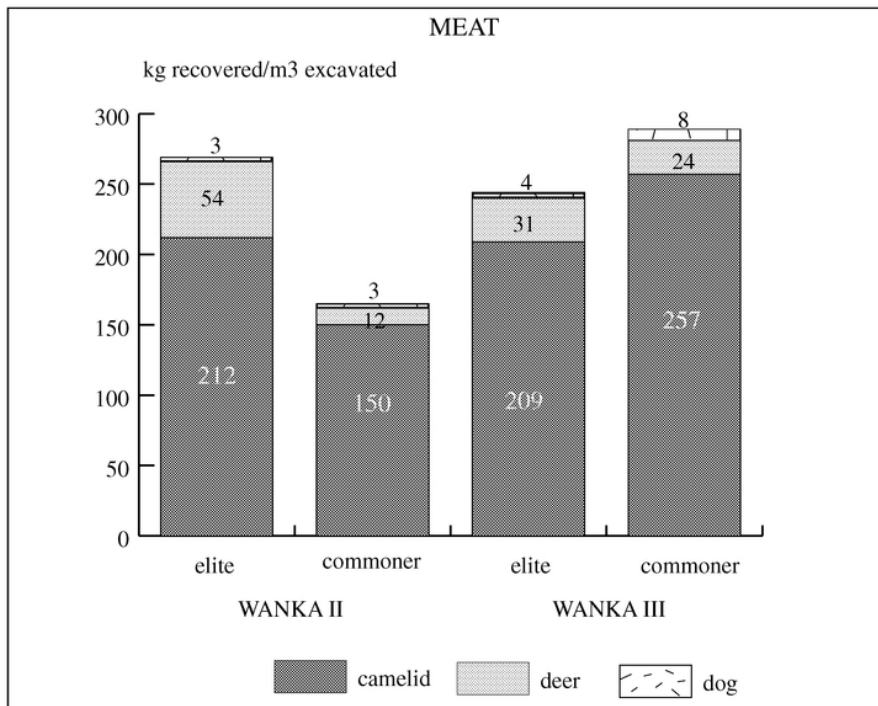


FIGURE 11.4 Bar chart illustrating the contrasting distribution of meat by status in wanka II and wanka III.

Elites also ate more meat, especially camelid and deer (Fig. 11.4). Specifically, the recovered faunal remains represent 212 kg/m³ of camelid meat and 54 kg/m³ of deer meat consumed in Wanka II elite households, compared with 150 kg/m³ camelid meat and 12 kg/m³ deer meat in Wanka II commoner households. Both status groups consumed roughly the same amount of dog meat in Wanka II. The differential access to preferred foods probably reflects the prerogatives of stewardship and positions in exchange networks characteristic of chiefdom societies in general (Powell 1988) and Late Intermediate Andean societies in particular (Cock 1977).

In Wanka III, differences in diet between elites and commoners narrowed considerably and occasionally reversed. Overall, the amount of maize recovered increased dramatically, from a ubiquity of 25 percent in Wanka II to a ubiquity of 70 percent in Wanka III (Hastorf 2001: Table 1). Both status groups had greater access to maize in Wanka III, with elite (ubiquity = 75 percent) households still yielding nearly twice as much as commoner patio groups (ubiquity = 40 percent; Fig. 11.3).

Christine Hastorf and Michael DeNiro (Hastorf 2001) have conducted a provocative analysis of the stable isotope ratios (¹³C/¹²C; ¹⁵N/¹⁴N) in human bone collagen recovered from burials encountered in our excavations. These

isotope ratios allow for the identification of the relative amounts of different types of plant foods in the human diet. The contribution of maize to the diet definitely increased in Wanka III, supporting conclusions drawn from the macrobotanical remains. Interestingly, little noticeable difference in maize consumption is evident between elites and commoners in either period. However, males may have consumed significantly more maize than did females in Wanka III.

In contrast to the preferred-plant-food distributions, in Wanka III commoners ate slightly more meat than did elites, especially camelid (faunal remains represent 257 kg/m³ consumed in commoner households compared with 209 kg/m³ in elite households) and dog (8 kg/m³ in commoner patio groups compared with 4 kg/m³ in elite patio groups). Elites continued to eat slightly more deer meat than did commoners (31 kg/m³ and 24 kg/m³, respectively; Fig. 11.4). Overall, commoners apparently consumed slightly more meat than did elites in Wanka III, though this difference is not statistically significant (Sandefur 1988).

In sum, two patterns appear in the subsistence data with the arrival of the Inka. First are the equalization and occasional reversal of elites and commoners in Wanka III in terms of access to preferred foods. Second is the difference between male and female access to maize. How are we to best explain these counterintuitive patterns in diet? Clearly, our data indicate that the state demands for tribute in food products did not adversely affect the local Wanka diet. Indeed, maize and meat consumption increased, and Owen and Norconk (1987) have argued that the overall health of the Wanka population improved following Inka conquest.

We suggest three possible explanations for the shift in relative consumption of preferred foods. First may be the effects of the population resettlement and imposed regional peace. State-guaranteed security within the valley appears to have allowed the use of fields, pastures, and hunting grounds that may have been difficult to defend, and therefore dangerous, in earlier periods. Especially as settlements were shifted to lower-elevation locations, maize lands became more accessible and therefore more heavily utilized. Second, we know from the ethnohistoric documents that patterns of resource ownership changed with Inka conquest. The state owned all lands through right of conquest. Subsistence plots were restored to community subsistence use in return for *corvée* labor provided directly to the state (Moore 1958). Similarly, the state owned the camelid herds (Rowe 1982) and therefore controlled access to camelid meat. Finally, Hastorf (1988, 2001) has argued that the distinct patterns of consumption by males and females in Wanka III may reflect differential access to state-supplied food. Hastorf specifically suggests that while the female consumption pattern appears to be reflected by the food remains found

within households, males may have "eaten out" for many of their meals, resulting in the higher maize content in their diet. As we know from ethnohistoric sources (discussed by Morris 1982), maize was the dominant crop mobilized by the state agricultural program, and this maize was used to make a *chicha* beer important in state-hosted feasts. Work for the state was compensated by special state-provided meals. In sum, it seems that the state created opportunities for obtaining desired foods and access to these opportunities was not controlled by local elites.

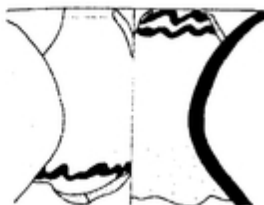
High-Value Utilitarian Items

Consumption of craft goods appears to follow a pattern parallel to that of food. Specifically, elites were distinguished from commoners in Wanka II, but the differences narrowed considerably in Wanka III. These patterns are seen in the differences in the distribution of several classes of ceramics (Fig. 11.5).

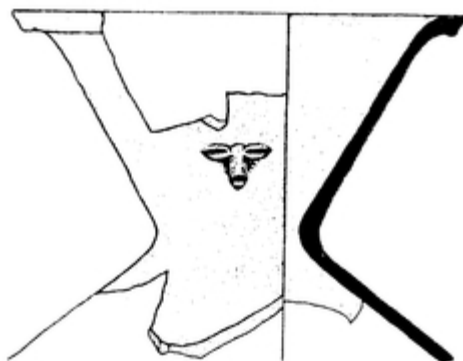
In Wanka II, prior to state conquest, elites used significantly more locally produced decorated pottery, specifically the Base Clara and Wanka Red types (Fig. 11.5a, b). Wanka II elite households yielded nearly 18 times as much Base Clara pottery as did commoner households (171 g/m³ recovered in commoner households, as compared with 3,056 g/m³ recovered in elite households). More than three times as much Wanka Red was recovered from elite households as from commoner patio groups (1,249 g/m³ and 408 g/m³, respectively; Fig. 11.6). Both of these differences are statistically significant at the .05 level. These more-decorative Wanka wares were the most labor-intensive of the ceramic styles produced within the study region (Costin 1986: Table 4.12; Hagstrum 1986, 1989). The most highly decorated ceramics were storage jars and serving bowls. These forms were visible in daily and ceremonial use, indicating the importance of such items in display contexts beyond their functional roles in storage and serving.

Similarly, in Wanka II elites consistently used more of the elaborate Andesite wares discussed in Chapter 10 (Fig. 11.5c). These ceramics were distributed widely, being recovered nearly 100 km from the inferred region of manufacture (Costin 2001). Nearly all of the Andesite pottery recovered in our

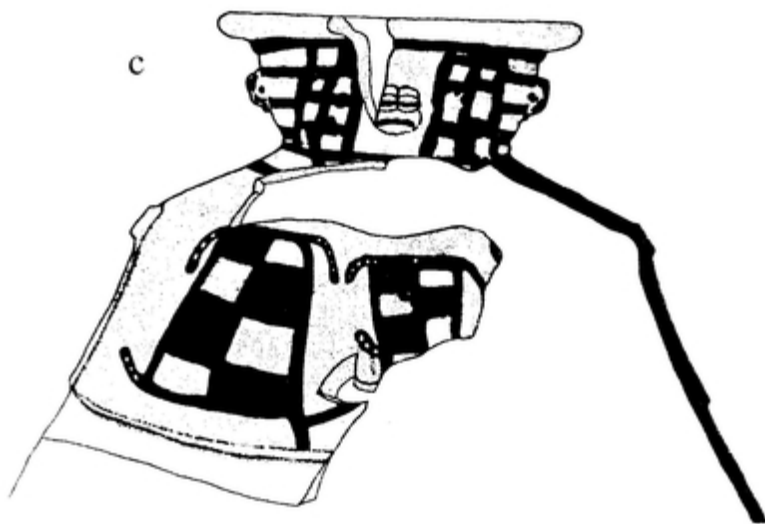
a



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c



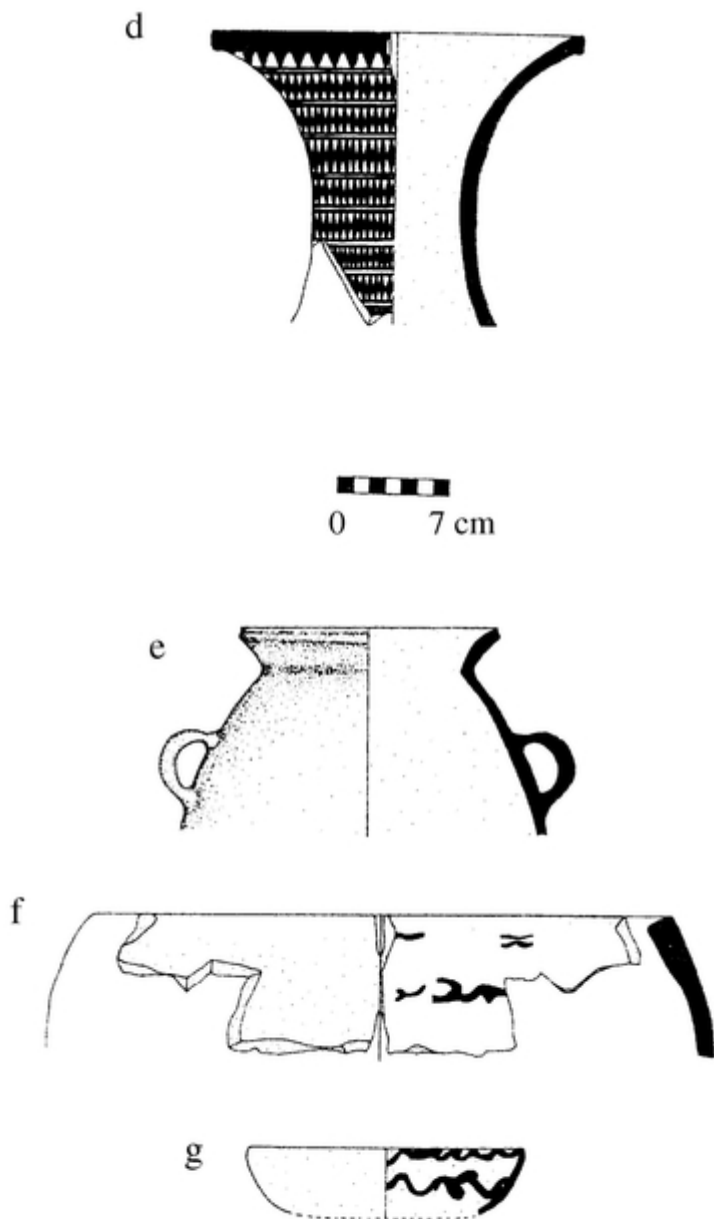


FIGURE 11.5 Ceramic types and forms recovered by UMARP. (a) Base Clara storage jar; (b) Wanka red storage jar; (c) Andesite storage jar; (d) Inka aryballoid; (e) cooking jar; (f) deep serving basin; and (g) small serving bowl.

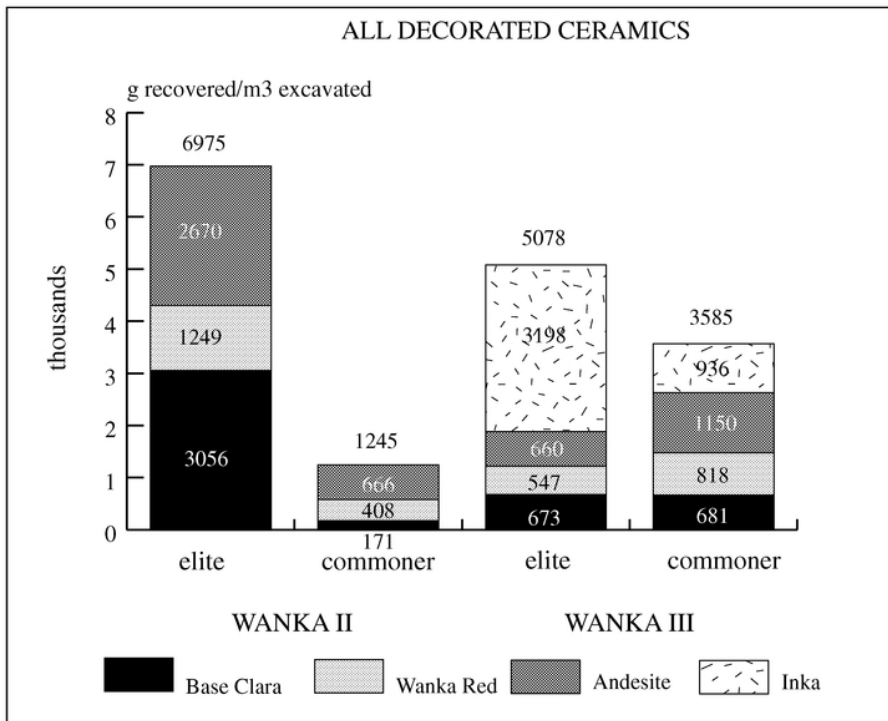


FIGURE 11.6 Bar chart illustrating the contrasting distribution of decorated ceramics by status in Wanka II and Wanka III.

excavations consisted of large high-necked jars, useful for storage and symbolic value. In our excavations of Wanka II contexts, four times as much Andesite pottery was recovered from elite patio groups (2,670 g/m³) as from commoner households (666 g/m³; Fig. 11.6). As with the locally produced decorated wares, the difference between elites and commoners is statistically significant at the .03 level. The Andesite wares were clearly the most "valuable" of the utilitarian ceramics used in Wanka II. Not only did they score 18 percent higher in an index of labor investment than did the most labor-intensive of the locally produced wares (Costin 1986: Table 4.12), but their transport costs—indicated by their weight and distance from source—would have added substantially to their value.

In Wanka III, some now-familiar patterns emerged. The distribution of the decorated local and regional wares was equalized between commoners and elites (Fig. 11.6). In fact, commoners had slightly more of the decorated local and regional wares, though these differences are not statistically significant. In addition to these changes in relative consumption rates, the use of two of these three decorated wares decreased from Wanka II to Wanka III: 50 percent for Base Clara (from 1,359 g/m³ in Wanka II to 678 g/m³ in Wanka III) and 36 percent for the regional Andesite wares (from 1,491 g/m³ in Wanka II to 961 g/

m³ in Wanka III). Although not statistically significant, these changes may reflect shifts in the locally defined prestige system and the nature of elite networks and power bases. In the Wanka II period, status and power were signaled by locally defined symbols. Elites maintained their power bases in part by building alliances with neighboring elites. These alliances were apparently symbolized in part through the exchange of prestige wares. In Wanka III, these regional networks became less important, replaced with a new type of alliance building and status distinction.

The only significant difference in the recovery of ceramics between commoners and elites in Wanka III was in the relative concentration of Inka-style ceramics, especially the famous aryballoid vessel form (Fig. 11.5d). We recovered more than three times as much Inka pottery in elite patio groups (3,198 g/m³) as we did in commoner patio groups (936 g/m³; Fig. 11.6), a difference that is statistically significant at the .05 level. The Inka wares were produced in a highly distinctive style at provincial workshops (Costin 1986; D'Altroy and Bishop 1990; Hagstrum 1986; Lorandi 1984; Murra 1978) and are found throughout the empire. They derived their high value from two sources. First, they were the most labor-intensive wares recovered from Wanka III households, scoring significantly higher in the labor index than either the local decorated or Andesite wares (Costin 1986: Tables 4.12 and 4.13; Hagstrum 1986, 1989). Second, these wares apparently were produced at managed workshops and distributed only through state channels (Hagstrum 1986). Thus, their limited/controlled distribution and symbolic tie to the Inka added to their value.

In sum, in Wanka III elites continued to be distinguished from commoners in the total amount of decorated pottery they used, but this difference is attributable only to differences in the consumption of Inka-style pottery. The leveling in ceramic prestige items of local and regional manufacture and their replacement by Inka ceramics reflect a change in the structure of access to power and authority. Locally defined prestige systems were downgraded as the Wanka elites were coopted into the Inka bureaucracy. Similarly, social and political relationships among neighboring regional elites were discouraged—either directly through military policy or indirectly through socialization into the new hierarchy. These regional—or horizontal—ties were replaced with vertical ties to the Inka as local elites became subordinate to the state and at the same time became increasingly dependent on the state to uphold their social distinction and legitimize their authority.

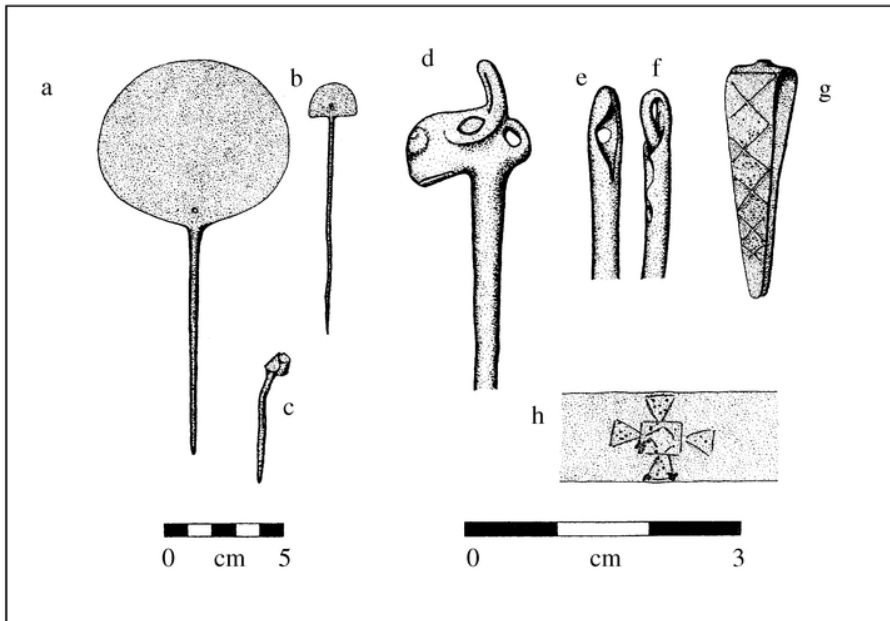


FIGURE 11.7 Major copper/bronze object types recovered in Wanka households: (a-c) *tupus*; (d) llama-headed pin; (e, f) needles; (g) tweezers with incised decoration; (h) strip fragment with incised decoration, (after Costin et al. 1989: Fig. 7; drawn by Bruce Owen)

The trend toward equalization in the distribution of high-value utilitarian goods also is seen in the distribution of utilitarian metal items, almost exclusively needles made of copper or bronze (Fig. 11.7e, f; Costin et al. 1989; Owen 1986; Owen et al. 1988). In Wanka II, these items were rare and concentrated in elite patio groups (Fig. 11.8). Elites had slightly more than twice the amount of these items than did commoners, with a ubiquity of 0.9 percent for Wanka II elite households as compared with 0.4 percent for Wanka II commoner households. The Wanka II sample was too small to allow a test of the statistical significance of this distribution.

The amount of copper/bronze in circulation increased dramatically in Wanka III. The increase in utilitarian copper/bronze primarily reflects an increase in the number of needles in circulation, but also includes a number of other utilitarian objects such as chisels, axes, and bola weights. In contrast with Wanka II, the occurrence of utilitarian copper/bronze objects in Wanka III does not seem to be differentially associated with elite contexts (Fig. 11.8). The ubiquity of these items was virtually identical in households of elite (2.5 percent) and commoner (2.8 percent) status. As with the distribution of the local decorated ceramic wares, the slight commoner advantage is not statistically significant.

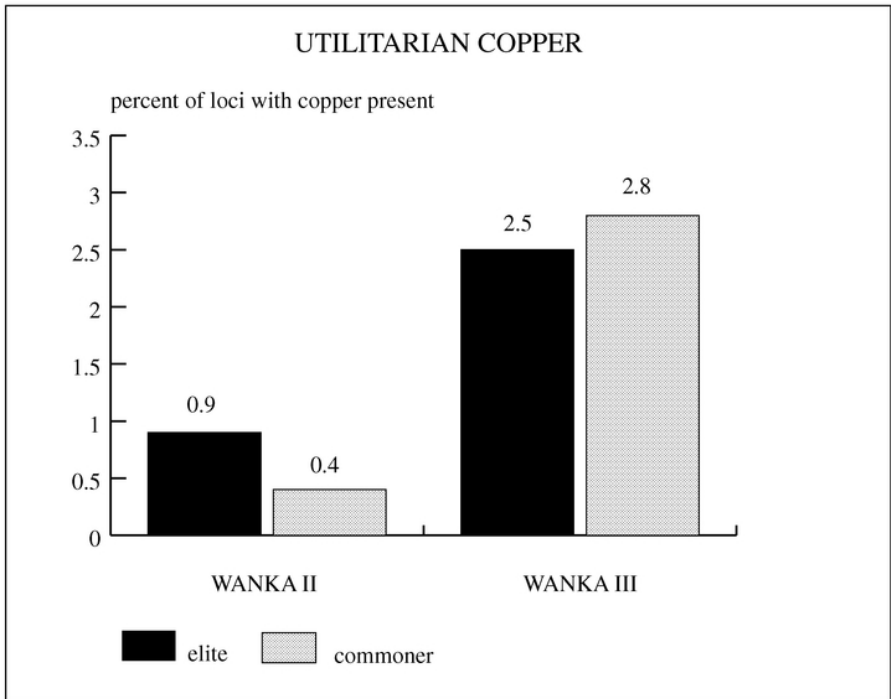


FIGURE 11.8 Bar chart illustrating the contrasting ubiquity of utilitarian copper/bronze items by status in Wanka II and Wanka III.

As discussed in [Chapters 8, 9, and 10](#), the Wanka III "copper" objects are tin bronze, requiring the long-distance importation of tin from southern Peru or Bolivia. Because tin bronze was found throughout the empire and because the shift to its use in many areas was sudden, it is attractive to believe that it was introduced by the empire, whose officials could control the movement of the tin and thus the manufacture of bronze objects by state craftsmen ([Chapter 9](#); Costin et al. 1989). As discussed in [Chapter 8](#), some special objects like the metal tools produced by the state may have taken on some value as a moneylike means of payment to people working for the state. This could explain why the overall distribution of controlled substances like the metal increased significantly with state conquest.

What appears to have happened was that access to most craft goods, especially the more utilitarian objects, became equalized in Wanka III. Status differences continued to be marked but with some interesting twists. Most notably, it appears that goods stylistically associated with the state were the primary items of portable material culture that distinguished elites and commoners.

The "Inkanization" of local elites is seen further in a shift in architectural style. In Wanka II, virtually all structures were simple circular structures

typical of the central highlands. Differences between elite and commoner housing were primarily in the fineness of the masonry and the size of the patio group. In Wanka III, while commoner housing continued largely unchanged in form, elites began building some rectangular structures with interior trapezoidal niches in direct imitation of Inka construction styles. In essence, eliteness became marked not through use of local symbols but by reference to the Inka state styles; perhaps to stretch the point, social inequality became legitimized by identification with the power and order of the dominant state.

Nonutilitarian Luxury Items

Specialty goods also were concentrated in elite households in Wanka XL. These objects included exotic ceramics, metal, and marine shell, all goods necessarily obtained by regional and long-distance exchange ([Chapter 10](#)). These objects played important roles in Wanka society, as stores of wealth, as symbols of elite control over sacred (foreign) knowledge and/or power, and as tokens of political and social alliances.

Few of the "nonlocal" ceramics recovered in the Wanka households (see Fig. 9 in original article) represent styles widely described in the archaeological literature for Peru. Some are from the neighboring areas of Tarma (Hastings 1985) and San Bias (Matos 1959). Most others are probably ceramics from less well known highland chiefdoms located in the central Andes, close to the study area. Among the imports recovered from Wanka III contexts were several small sherds assignable to the Chimu style, indicating commodity flows in the Late Horizon from Peru's North Coast and the Central Highlands.

Counts of exotic ceramics were low in all contexts, accounting for much less than 1 percent of the assemblage in both Wanka II and Wanka III. In both periods, the frequency of nonlocal types was higher in elite households than in commoner patio groups ([Fig. 11.9](#)). In Wanka II, elites had over five times the quantity of exotic ceramics as those recovered in commoner households (166 g/m³ in Wanka II elite households as compared with 30 g/m³ in commoner households). The difference narrowed in Wanka III, though elites (31 g/m³) still had nearly twice as much ceramic material obtained through long-distance exchange as did commoners (17 g/m³). This difference between status groups indicates significantly greater elite participation in extraregional networks in both periods. There was a 74 percent drop in exotic ceramics from Wanka II to Wanka III (86 g/m³ recovered from Wanka II contexts and 22 g/m³ recovered from Wanka III contexts). As with the decrease in Andesite wares, the decrease of other imported types in Wanka III suggests a shift in alliance building in the Mantaro Valley from horizontal ties between neighboring elites to vertical ties

between local elites and the Inka state.

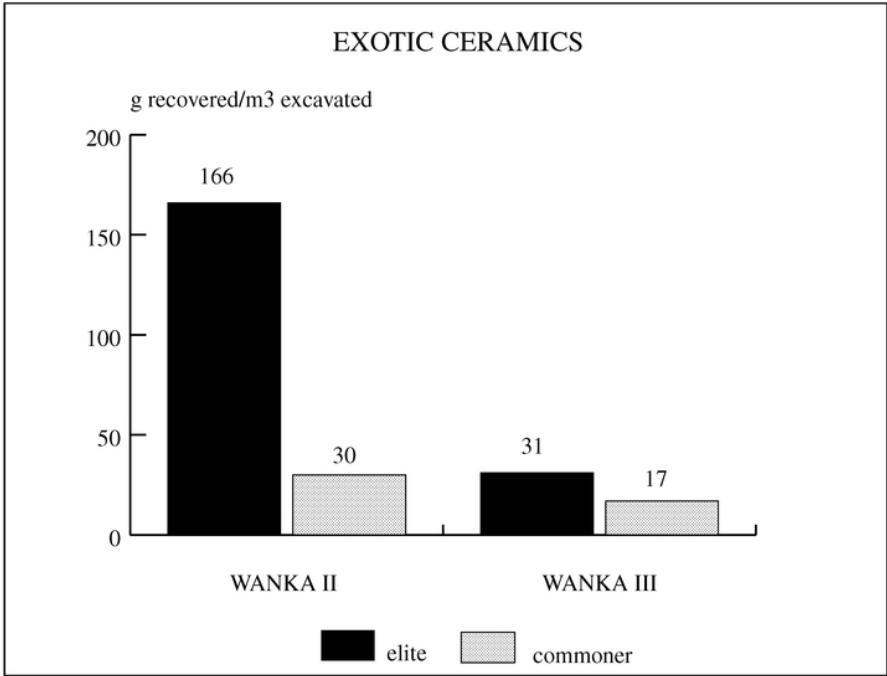


FIGURE 11.9 Bar chart illustrating the distribution of exotic ceramics by status in Wanka II and Wanka III.

Equally important was the concentration of luxury metal objects in elite households (Owen 1986, 2001). Although the ores were available within the Mantaro region, evidence of the recovery and smelting of ores and for careful object fabrication suggests a fairly sophisticated metallurgy, which may well have been under direct sponsorship by elite patrons. Objects of silver for display, such as the *tupu* pins used to fasten a woman's shawl and pierced disks sewn onto clothing, were concentrated heavily in elite households in both periods. In Wanka II, elites had five times the ubiquity of silver as did commoners (elite = 3.5 percent compared with commoner = 0.7 percent), a difference that is statistically significant at the .02 level (Fig. 11.10).

In Wanka III, the amount of silver in circulation decreased slightly and was even more concentrated in elite hands. Under Inka domination, elites had more than seven times the amount of silver as did commoners (elite ubiquity = 2.9 percent compared with commoner ubiquity = 0.4 percent), a difference that is statistically significant at the .03 level. These differentially held silver items probably served as part of distinctive clothing used to mark social status. In Wanka II, display objects made of copper included ornaments, disks, tweezers (Fig. 11.7g), *tupus* (Fig. 11.7a-c), and *tumi*-shaped ornaments. All were

extremely rare, and ubiquity in elite (0.5 percent) and commoner (0.4 percent) households was virtually identical (Fig. 11.10). Tin bronze, a material closely associated with the Inka state, partly replaced silver as the dominant luxury metal. In Wanka III, the imperial tin bronze partly replaced silver in display objects. The dramatic increase in copper under Inka domination involved many objects that appear to become substitutes for silver in local contexts. These objects, especially the *tupu* pins, were held differentially by the elites. Wanka III elites held three times the number of luxury copper/bronze goods than did commoners (elite ubiquity = 4.1 percent; commoner ubiquity = 1.2 percent; Fig. 11.10). This difference is statistically significant at the .05 level. At least two of these pins, a cast pin with a llama head (Fig. 11.7d) and one with a human head, are stylistically similar to a broadly spread Inka style (Owen 1986). Casting as a technique was used in the Yanamarca only after Inka conquest, so it may in itself be an Inka stylistic or technological introduction (Costin et al. 1989). In sum, status differences in Wanka III continued to be marked in the distribution of luxury metal objects, but the presumed state control over the tin and the new style references suggest state intervention in the distribution of these prestige goods.

Other wealth objects found in small numbers (27 pieces from good contexts) are marine shell beads and pendants (Owen 2001). Overall, these were concentrated in elite contexts (Fig. 11.11). The concentration is statistically significant ($p = .03$) in Wanka II, with nearly five times the frequency of finds in elite households (elite ubiquity = 3.3 percent; commoner ubiquity = 0.7 percent). In contrast, the difference is not statistically significant in Wanka III (elite ubiquity = 2.9 percent; commoner ubiquity = 1.6 percent). Although the numbers are small and possibly unreliable, the same pattern of leveling in the distribution of status goods without state stylistic referents was occurring.

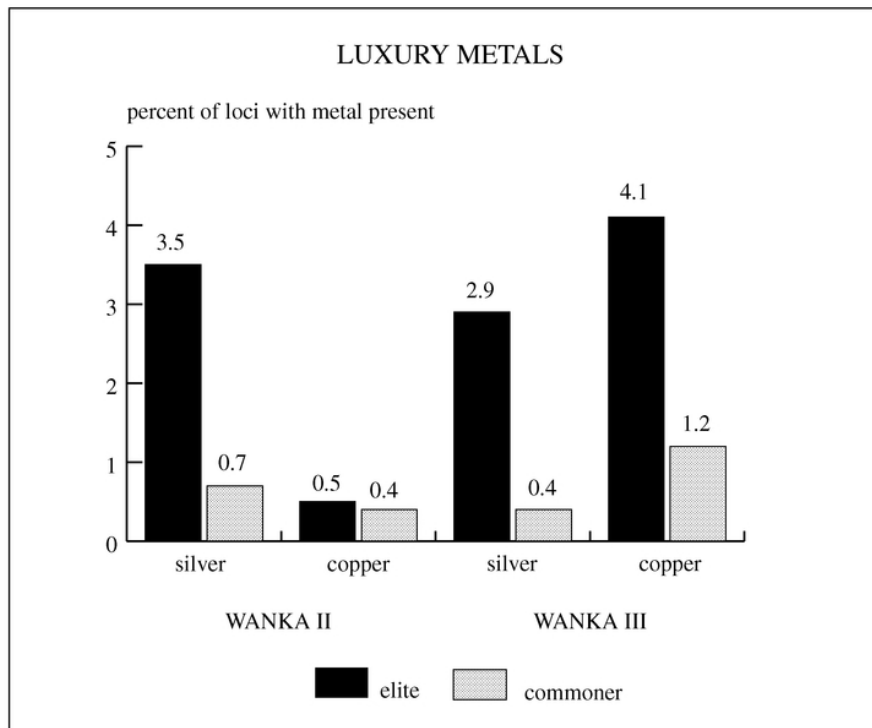


FIGURE 11.10 Bar chart illustrating the contrasting distribution of luxury metal objects by status in Wanka II and Wanka III.

Evidence from the nonutilitarian luxury items reinforces the patterns seen in the other data sets. During Wanka III, elites continued to be distinguished by these prestige goods, although the division was less marked. The types of luxuries most important in status differentiation had explicit symbolic reference to the state and/or their manufacture was under close state control. This may be interpreted as an overall leveling of the society as commoners gained access to desired goods perhaps through state payments for services. Alternatively (and a proposition needing to be investigated with further research), the highest Wanka elites may no longer have resided in local settlements; they may have been resettled to the newly established Inka settlements so that their share of the prestige goods would have been removed from local consumption.

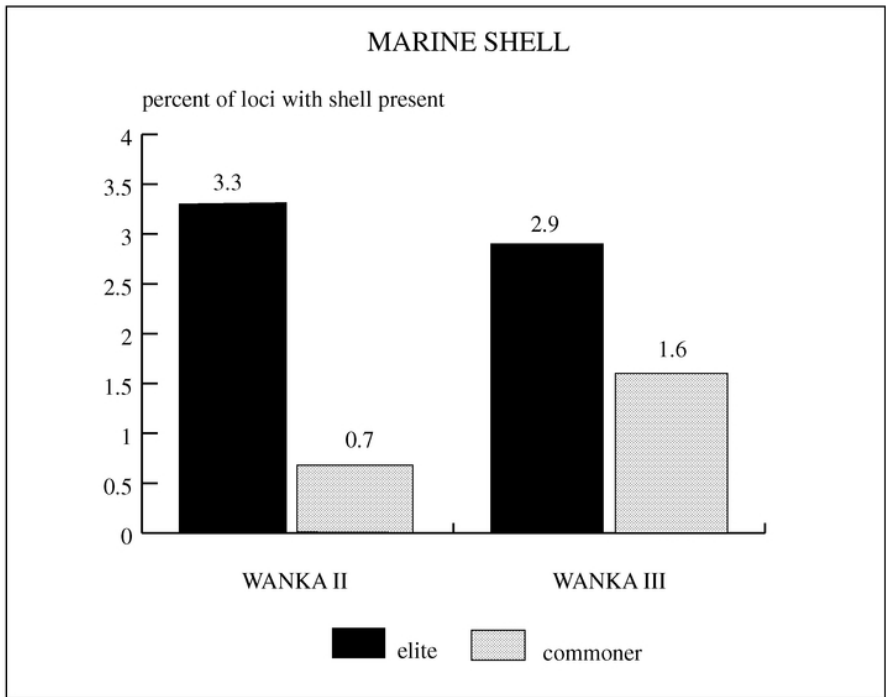


FIGURE 11.11 Bar chart illustrating the contrasting ubiquity of marine shell by status in Wanka II and Wanka III.

Differential Participation in Status-Associated Activities

Some goods recovered in Wanka households were used in ceremonial activities that served to support status distinctions in Wanka society. The concentrated distribution of storage and feasting activities in Wanka II in elite households contrasts with a more equal distribution under Inka domination.

Storage

Our primary evidence of storage consists of large ceramic jars (Fig. 11.5a–d) recovered in both periods and separate storage buildings (*qollqa*) that were constructed away from habitation sites in Wanka III (Chapter 8). In Wanka II, elites (864 g/m^3) consumed significantly more storage jars than did commoners (164 g/m^3), a difference statistically significant at the .01 level. This difference may reflect elite control over the mobilization of subsistence products. We

suggest that stored items—especially highly desired maize—would be used to support retainers and in feasting activities hosted by the elites.

With Inka conquest, the overall quantity of stylistically Wanka jars (Base Clara, Wanka Red, and Andesite) dropped 46 percent from 452 g/m³ in Wanka II to 206 g/m³ in Wanka III. This decrease is evident exclusively in elite households (Fig. 11.12), with Wanka III commoner households (217 g/m³) yielding slightly more local-style storage jars than elite households (189 g/m³), a difference that is not statistically significant. Local-style storage jars were replaced to some extent by Inka aryballoids. Combining all types of storage jars, we see a 25 percent decrease in total household storage, from 747 g/m³ in Wanka II to 559 g/m³ in Wanka III, a difference that is not statistically significant. Elites had significantly more Inkastyle aryballoids than did commoners, 231 g/m³ as compared with 69 g/m³. Adding together local, Andesite, and Inka-style storage vessels, elite households had more storage than commoner households—about 45 percent more (420 g/m³ recovered in elite households, compared with 286 g/m³ recovered in commoner households)—but this difference is not statistically significant and cannot compare to the local elite monopolization of surplus in the Wanka II period.

A second change occurred in the context of storage. In Wanka II, storage was a household activity, though as discussed above, some households stored more than did others. To date, we have not recognized any special storage features or facilities that can be assigned to the Wanka II period. All structures within the patio groups were multifunctional domestic structures (Costin and Russell 1985; Earle et al. 1987; cf. Kadane and Hastorf 1988). The only nondomestic structures recognized to date are *chullpas*, or burial structures.

In contrast, in Wanka III, the Inka state built large storage facilities outside of the local communities. Mobilized agricultural products and requisitioned craft items flowed into the Inka warehouses, to be distributed for military and social purposes as the Inka administrators saw fit (Chapter 8; Morris 1967). The key here is that in Wanka III, apparently for the first time in the Yanamarca, storage became a supradomestic activity on a large scale. Stored surpluses no longer were associated with specific individuals or families, but with communities and, more importantly, with state institutions. Thus, the context of political finance changed dramatically.

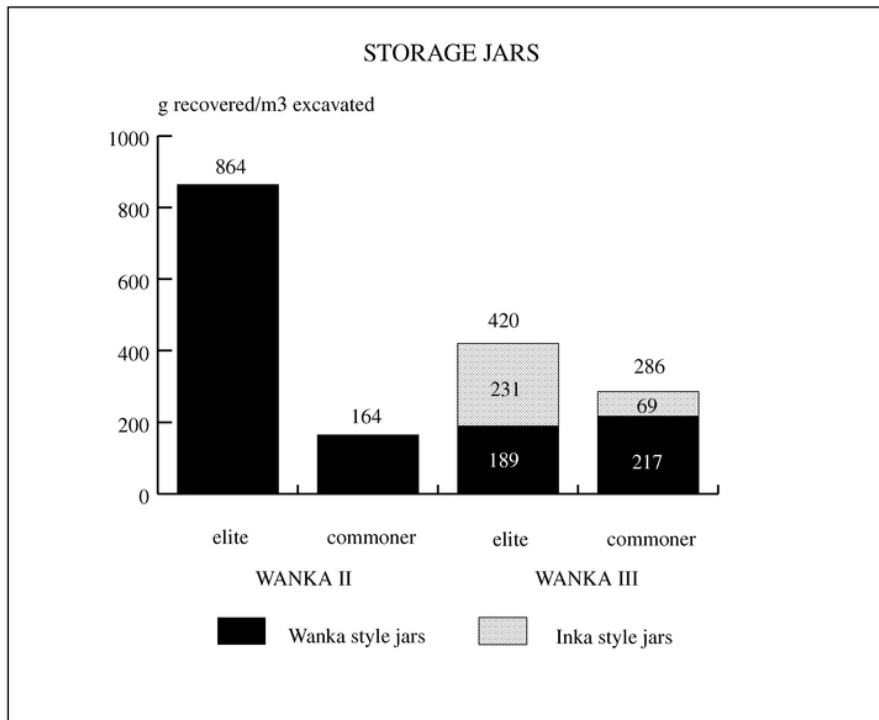


FIGURE 11.12 Bar chart illustrating the contrasting distribution of large storage jars by status in Wanka II and Wanka III.

Two trends exist in the storage data. First is the critical decrease in the amount of household storage among elites in Wanka III. With their apparent loss of control over surplus subsistence products, local elites lost some of their ability to finance and maintain an independent power base. Second is the shift—evident in the architectural data—from personalistic control of surplus in Wanka II to control by broadly constituted political institutions after the Inka conquest.

Feasting

Feasts and ceremonies of hospitality, primarily hosted by elites, presumably served to symbolize reciprocal relationships with commoners, to reward loyal retainers, and to reinforce alliances. Two types of data indicate the intensity of feasting within Wanka households: evidence of food preparation and evidence of serving and consumption. The data indicate that in Wanka II the inhabitants of elite patio groups hosted significantly more and/or larger feasts within their personal space than did the inhabitants of commoner patio groups. The artifactual data indicate that in Wanka III the overall amount of locally

sponsored feasting fell dramatically and the distribution of serving-related artifacts was equalized.

In Wanka II, elite households consumed significantly more cooking vessels (Fig. 11.5e) than did commoners, indicating that they routinely prepared food for more people. Specifically, we recovered 373 g/m³ of cookware from elite contexts, as compared with 125 g/m³ from commoner contexts (Fig. 11.13), a difference that is statistically significant at the .02 level. Such provisioning may reflect a greater number of permanent dependents living in the household, larger numbers of visitors and temporary household personnel, support of *corvée* labor, or regular ceremonial feasting. All situations can characterize elites in complex society (Chapter 3; Netting 1982; Smith 1987).

Burned bone also was concentrated heavily in elite contexts in Wanka II (Fig. 11.13), with elites having nearly six times (64 g/m³) as much as commoners (11 g/m³) (Sandefur 1988). The bone data indicate a strong preference for roasting, as opposed to boiling, in the preparation of meat. Such a procedure is more costly in terms of fuel and lost foods, but follows a preference for flavor-enhancing preparation techniques. Such roasted foods may have been served preferentially at feasts, analogous with the preparation of roasted meats in the *pachamanca* pits used for special occasions throughout Peru today.

Wanka II elites consumed significantly more serving vessels of all sizes, which may well have been used in special or ceremonial meals. Small bowls (Fig. 11.5g) would have been used to serve individual portions, while large, deep basins (Fig. 11.5f) may have been used to prepare and serve *chicha* beer or serve foods prepared in a *pachamanca*. Wanka elites consumed more than three times as many small bowls as did commoners, 562 g/m³ as compared with 167 g/m³ recovered in commoner households, and nearly five times the number of large serving basins, 530 g/m³ as compared with 110 g/m³ (Fig. 11.14). Both differences are statistically significant at the .03 level.

In Wanka III, ceremonial orientation apparently shifted, with the state coopting much of the feasting activities that earlier had been the prerogative of the local chiefs. Serving vessels of both forms decreased in Wanka III, 31 percent for small bowls (from 329 g/m³ in Wanka II to 230 g/m³ in Wanka III) and nearly 70 percent for the large basins (from 283 g/m³ in Wanka II to 86 g/m³ in Wanka III). The decrease especially was evident in elite households, suggesting to us that feasting was no longer as important an activity of local leadership (Fig. 11.14).

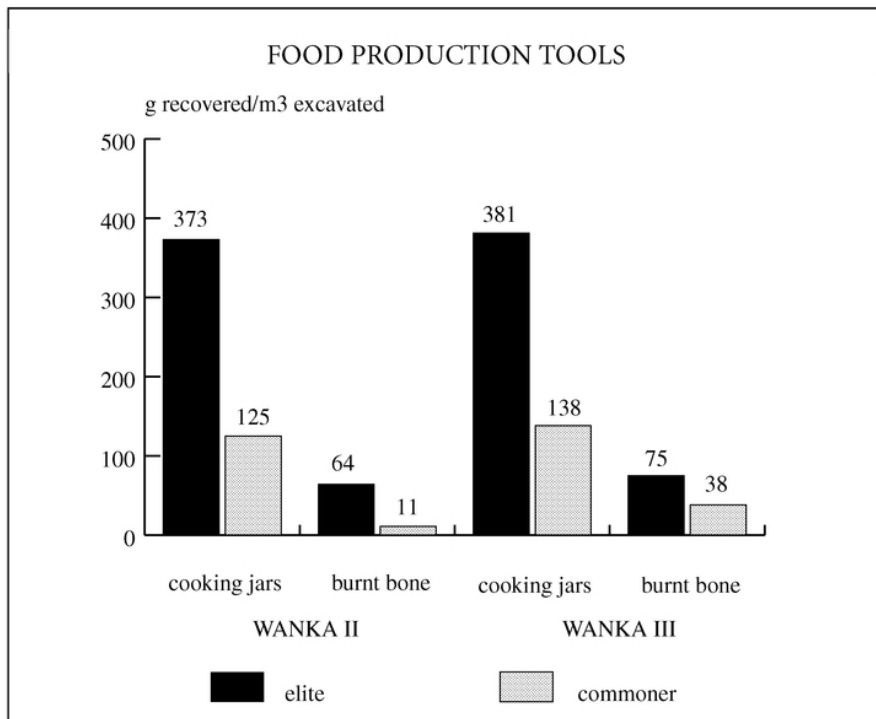


FIGURE 11.13 Bar chart illustrating the contrasting distribution of food production tools by status in Wanka II and Wanka III.

Unlike the artifact classes associated with serving at feasts, the amount of food preparation changed little from Wanka II to Wanka III. Elites continued to have significantly more cooking vessels than did commoners (381 g/m³ in elite households and 138 g/m³ in commoner households; [Fig. 11.3](#)). Although the amount of burnt bone increased in commoner patio groups (to 38 g/m³), elites—with a mean of 75 g/m³—continued to consume more roast meat than did commoners.

In light of these data, it is interesting to note once again that maize cobs and kernels were concentrated in elite patio groups in Wanka III, but the isotopic data suggested there was little difference in actual diet between status groups. Hastorf (1988, 2001) argues that macrobotanical remains reflect plant production more accurately than actual plant-food consumption, with the latter best measured by isotopic analysis of human-bone collagen. We interpret the discrepancy between our macrobotanical and isotopic data for Wanka III as further suggestion that elites may have differentially prepared high-value foods that were served more equitably to all status groups.

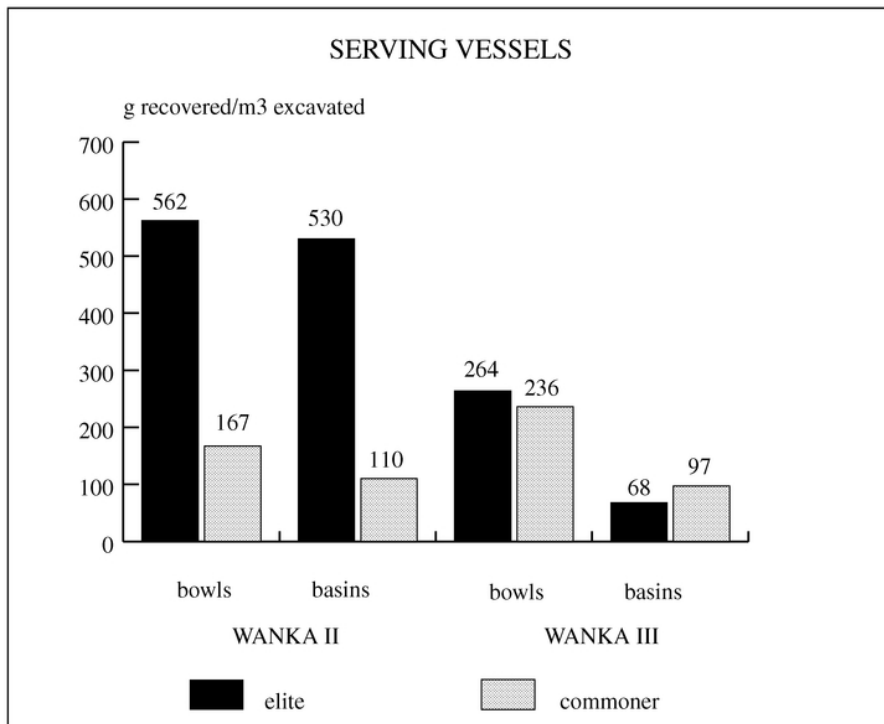


FIGURE 11.14 Bar chart illustrating the contrasting distribution of serving vessels by status in Wanka II and Wanka III.

While in Wanka III the evidence of feasting decreased in household contexts, considerable evidence of feasting has been identified at Inka administrative centers. Large-scale facilities for cooking have been identified at the administrative center of Huanuco Pampa (Morris 1978; Stein 1975). Inkastyle aryballoid jars were associated with this feasting activity (Morris and Thompson 1985). At Hatun Xauxa in the Mantaro, ceramic consumption was dominated by the state aryballoid vessels (D'Altroy 1992). As we have just mentioned, it was the state-style ceramics, especially the aryballoids, that distinguished local elites; these objects surely were obtained from the state, perhaps at such important feasting events. The high contribution of maize to the male diet also may reflect repeated participation in state-sponsored feasts where maize beer was a major component.

In sum, we see contrasting patterns in the artifacts associated with food preparation and serving. The evidence of food preparation in elite households did not decrease from Wanka II to Wanka III, but the evidence of serving did. Working independently with the lithic materials, Russell (1988) has reached similar conclusions. The large stone-grinding platforms used in *chicha* and food preparation were concentrated strongly in Wanka II elite households, and

continued to concentrate into Wanka III.

Under imperial rule, Wanka elites continued similar amounts of cooking activities, but they were no longer hosting ceremonies in their own personal space. The question of whether feasting was moved to the public areas of the large local communities or exclusively to imperial facilities must be resolved by further research. The key point is that in Wanka III, ceremonial feasting deemphasized individual local leaders feasting allies and friends in their private space. The change in location implies a broader institutional framework of patronage as feasts came to be associated not with individuals' space but with public space. Local elites probably still differentially bore the burden of preparing the food, but they no longer had exclusive claim to the benefits of such activities.

Discussion and Conclusions

Following Inka conquest of the Upper Mantaro, shifts in patterns of consumption apparently reflect reorganization of economic and political relationships within the Yanamarca Valley. Specific measures were taken by the Inka to maintain state control over subject populations. An analysis of the distribution of goods recovered in Wanka households reveals the effects of Inka financial policies and illustrates strategies used to enculturate the population and legitimize Inka rule.

Inka tribute demands had little negative effect on general household consumption of subsistence and utilitarian commodities. Rather, because of concomitant changes—the shift in settlement pattern, the regional peace, state-sponsored feasting, and state payments for services—consumption of preferred foods such as maize and meat increased. The direct evidence from the diet and from osteological studies indicates the generally positive effect of the regional peace, especially on the commoner class. Many of the status differences recognized in Wanka II were reduced or equalized in Wanka III. With the imposed peace, all gained freer access to local resources that included agricultural fields, pasturage, hunting grounds, and craft producers. Essentially, rights of access became guaranteed by the state in return for labor provided to the state in a full range of required projects. Local elites, however, apparently lost some control over their preferential access to certain subsistence goods and craft items. In fact, access to productive resources and many goods in Wanka III probably depended less on one's relationship to local leaders than it did on one's work for the Inka state.

The full impact of the conquest is seen in artifact distributions that illustrate

Inka strategies to transfer political and economic control from local elites to the state and to win the allegiance of the general population. Although local elites were appointed to positions within the Inka administration of the province (D'Altroy 1987), the move deprived them of independent political sovereignty (Silverblatt 1988). Thus, the state effectively transferred control from the local elites to itself. With Inka rule, authority was no longer locally defined and maintained. Traditional sources of power—both economic and ideological—were removed from direct control of local Wanka leaders as the state developed its system of compensation and allegiance. The effects of the Inka conquest on local Wanka elite control are manifest in four ways. First, the disparity between elites and commoners in terms of consumption of preferred foods, of high-value utilitarian craft goods, and of nonutilitarian luxuries narrowed significantly from the pre-Inka to Inka periods. It would seem that local elites lost their power to mobilize many prestige commodities. Second, household storage among the Wanka elites dramatically declined with Inka conquest and essentially became equal to commoner storage. Thus, elites lost control over staple accumulation that served to support the feasts in regional prestige exchange. Third, local Wanka elites apparently also lost control of various ceremonial functions they had held as local leaders in the pre-Inka period. The hosting of feasts—important for rewarding retainers and building alliances—came to be associated with the state rather than individual local leaders. Fourth, the social differentiation between elites and commoners came to be dependent on state symbolic systems, as locally manufactured high-value items were replaced by items produced by state artisans in the state style. Thus, the state transferred allegiance to itself as the prestige system came to depend on state-defined symbols, rather than on locally defined criteria. Local elites continued to hold positions of power, but their authority was legitimated through their ties to the Inka state, rather than through independent means.

Our data illustrate the steps taken by the Inka to consolidate their control over the province of Wanka Wamani in the Central Andes, and their effects on the local Wanka population. The state sought to expand the financial base of its power through imposition of tribute demands and to legitimize its rule by transferring the allegiance of the subjugated population from the local ethnic elites to the state. In doing so, the bulk of the population—the commoners—did not suffer adversely. In fact, they materially benefited from the conquest. It was the position of the local elites that clearly was compromised by conquest. Although status distinctions remained—albeit to a somewhat reduced degree—the Wanka elite lost their independent economic base and were obliged to adopt specifically Inka stylistic referents to status and power. To the degree that local elites became dependent on the state for access to status-defining symbolic objects, the state asserted control over a new ideology of rule

(see [Chapter 14](#)).

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Part III

Chiefdoms of Denmark

Denmark is a northern country, located above 55° north latitude ([Fig. III.1](#)). Its territory contains the peninsula of Jutland, Sjælland, Fünen, Lolland, and many small islands. The country is almost surrounded by water; to the west is the North Sea, and to the east the Baltic. In prehistory, Denmark was outside the agricultural heartland of central Europe and the civilized world rimming the Mediterranean Sea. With successful fishing communities, its Mesolithic people were late to adopt agriculture (about 3500 B.C.). In another perspective, however, Denmark was a mercantile and political center to northern Europe. In early medieval times, urban centers sprang up, and Viking traders, raiders, colonizers, and conquerors sailed out as far as Newfoundland and Constantinople.

The region chosen for my investigation is Thy, located on the extreme northwest coast of Jutland. Thy is a small region, about 2,100 km². It is flat and narrow, bordered on the west by the North Sea and on the east by an elongated bay, the Limfjord. The landscape is gently rolling with hills (maximum elevation: 74 m) and small streams, lakes, and bogs. The underlying geology consists of a few uplifted chalk ridges, but the terrain is mostly the gently rolling moraines laid down by the last glacial advance. To the west, ocean surf and strong onshore winds erode the land and blow sands inland, and postglacial uplifts have exposed former seafloor. The soils of the moraines and seafloor are farmed for grain crops, pigs, and dairy; along the coast fishing still prospers. Small areas of heath, once more common, are preserved as nature sanctuaries, although heath vegetation is an anthropogenic plant community created by overgrazing. Recently small forests have been planted to stabilize

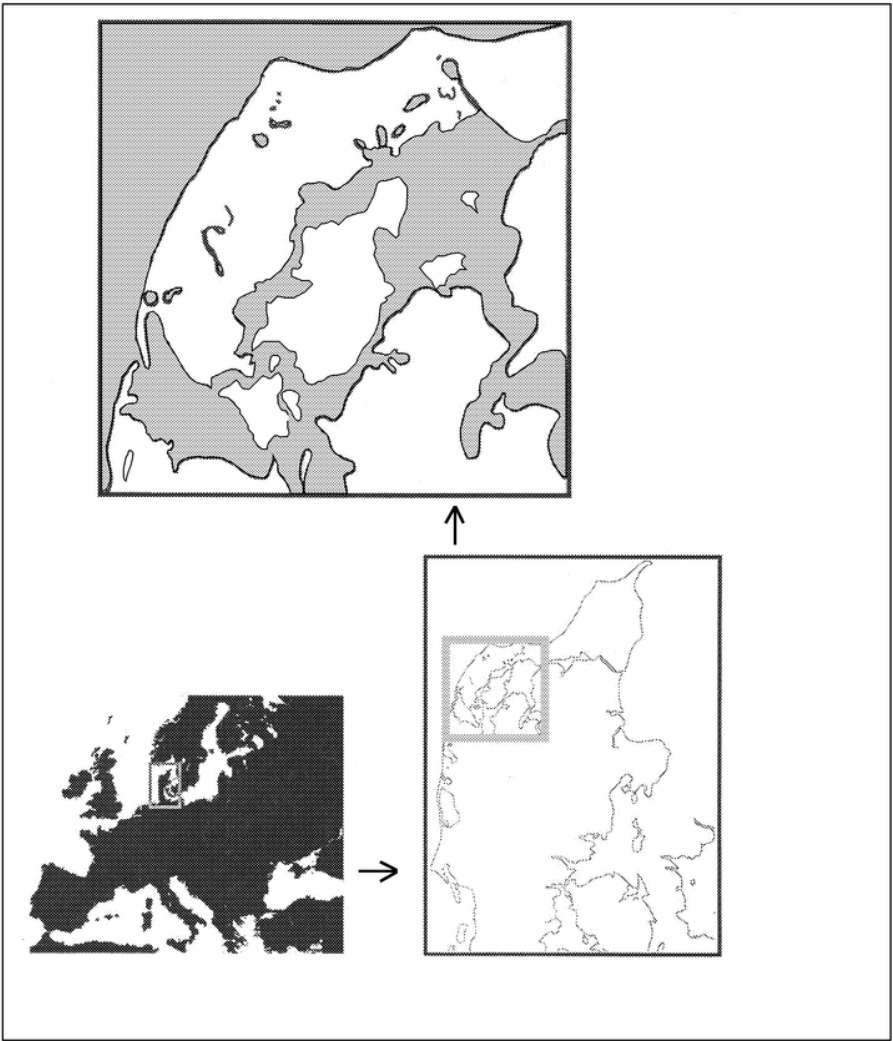


FIGURE III.1 The Thy region, Denmark, (*prepared by John Steinberg*)

the region's soils. The climate is cool with temperature extremes modified by the surrounding water (average temperature: 0.3° C [31°F] in February; 16.2°C [61°F] in July); overall rainfall (annual precipitation: 750 mm) is also fairly steady, but highest in the fall. Light snowfall is not unusual in winter, and without large streams and irrigation, summer drought can diminish harvest.

The Danish case considered here concentrates on the Late Neolithic and Bronze Ages (2300-800 B.C.). Although these ages took place prior to historical documents, the archaeology as described in [Chapters 12, 13, and 14](#) depicts a politically charged world of chieftains (Redmond 1998, 1999) that, by analogies, we may capture by looking at the protohistoric period, described vividly in the epic poem *Beowulf* (Heaney 2000) set in Denmark during the sixth century and

in the Icelandic sagas of late Scandinavian chieftains. A fiercely proud people with regional "kings" and their warriors structured a Germanic society that allowed only modest inequalities within a strong ethos of chieftain equality (Gilman 1995). Order was problematic and contingent on warrior strength that itself was continually contested. The story of Beowulf describes three generations of Danish overlords down to Hrothgar. Successful in foreign raids, Hrothgar had attracted many supporters and built a great mead-hall, where he feasted and gave riches to his allies and supporters. Here his warriors were ready to defend their lord.

At their heads ... [the warriors] placed their polished timber
battled-shields; and on the bench above them,
each man's kit was kept to hand:
a towering war-helmet, webbed mail-shirt
and great-shafted spear. It was their habit
always and everywhere to be ready for action,
at home or in the camp, whatever time the need arose
to rally round their lord.

[Heaney 2000: 87, 89]

Beowulf came to the hall of Hrothgar to aid the besieged lord against the monster Grendel, and Hrothgar gave Beowulf war-gear of breast-mail, a helmet, and special sword "that was both precious object and token of honor" (Heaney 2000: 69). Later as Beowulf lay dying, he commanded his followers "to construct a barrow on a headland on the coast... It will loom on the horizon . . . and be a reminder among my people" (Heaney 2000: 189).

In the sixth century at the time of the Beowulf story, Denmark was organized by competing and unstable chieftains. Lords were weak, and their power and authority were based on fearless exploits and wealth seized from the fallen Roman empire. Hedeager (1994) captures the essential "gift economy" of the early Viking period; chieftains set out yearly on "spring and autumn tours" to pillage the south for plunder with which to gain personal prestige through gift exchange and display. Recent books about Medieval Iceland describe how Viking chieftains settled the bleak north Atlantic, built a stratified society, and resisted attempts by Norwegian kings to extend political power over them (Byock 1988; Durrenberger 1992; Miller 1990). The Scandinavian chieftains were an unruly lot. Local chieftains might swear loyalty to a lord, only to turn on him as political opportunities changed.

The historic accounts are only a dramatization, and the changing political dynamics of prehistoric Thy must be told by working from the region's archaeology. My involvement with Danish archaeology began in 1990 with the Thy Archaeological Project (TAP). The Project was an interdisciplinary, long-term investigation of landscape changes and social evolution from the

Neolithic to Medieval periods (Earle et al. 1998; Kristiansen 1998b). Kristian Kristiansen, then head of the division of the Danish Ministry of the Environment responsible for archaeological site preservation, invited an international team to set up a project. We included Jens Henrik Bech of the Thisted Museum in Thy, Mike Rowlands and Nick Thorpe of University College, London, and myself, then of UCLA.

Over eight years (1990-1998), TAP conducted field surveys to locate prehistoric sites, systematic surface recovery of artifacts from the plow zones to date and describe economic activities at these sites (Steinberg 1996, 1997), and intensive excavations of Late Neolithic and Bronze Age houses to describe household economies of chieftains and commoners. We concentrated on 17 study parishes within a 10-km catchment circle centered where we took a primary pollen core to reconstruct environmental changes. Additionally we conducted specific investigations at sites within Thy's 65 parishes. Let me capture a brief sketch of life during those periods that can provide background for the following chapters on the region's economy.

Late in the Neolithic (*Dagger Period*, 2400-1900 B.C.), settlements were single farms or hamlets with small pithouses and sometimes with special buildings. These small settlements were quite common in Thy, evidently representing a population increase from the middle Neolithic. The subsistence economy of the Dagger Period included both cereal farming and animal husbandry. Settlements were placed prominently in the landscape, making them quite defensible. Households were similar, one to the next, and though warrior status was marked by weapons, chieftains were not clearly differentiated from others. I believe that territories were marked by the permanent settlements. Long-distance exchange and international warrior identities symbolized by Bell Beaker material culture connected Thy with much of Europe. A rudimentary political economy was based on prestige-goods exchanges that extended from Britain to the Baltic and down into central Europe (Shennan 1986). Some metal objects were imported from the British Isles, and the famous flint daggers of Denmark were fashioned as copies of Bell Beaker metal daggers.

During the *Early Bronze Age* (1700-1300 B.C.), a scattering of small settlements in Thy suggests a population density similar to that of the Late Neolithic. The primary settlement unit was a farm with a main house and outbuildings. Although farm buildings were occupied for a short time, the general area was continuously used by a sequence of houses across many generations. Houses varied considerably in size—some large (like the Legård hall) suggesting a major chieftain's farm, others still substantial (like Bjerre site 6) were likely occupied by warriors, and many smaller farms, occupied by family farmers and perhaps cottagers. Settlements suggest a ranking of

persons, but each tied to a farm. Positioned somewhat lower in the landscape than in the Dagger Period, farm house locations suggest less concern with defense than earlier. Security had been established, presumably by a regional political structure. The subsistence economy was based on farming and animal husbandry. Animal bones were mainly of cattle that may have been raised for export. The political economy focused on prestige-goods exchange with the agricultural heartland of Europe, importing bronze for weapons and jewelry and exporting in exchange amber and cattle hides. The most dramatic evidence in the landscape of the Early Bronze Age is the abundance and prominence of earthen barrows. We believe that these are the burials for only a segment of the population—the warriors and emergent chieftains, who were buried with their bronze swords and daggers.

The social organization of the Early Bronze Age apparently consisted of ranked chiefdoms, in which a few individuals controlled the most and best status objects. The landscape was crowded with turf-built barrows, among the highest densities anywhere in Denmark or Europe. The barrows clustered on the highest and most visible locations of Thy, especially near Lake Ove (Fig. III.2). Within a parish such as Sønderhå, the numbers and size of barrows in the different locations suggest a hierarchy. Visible from the rest of the parish, the high barrow of Baunehøj stands prominently on a knoll above the Legård hall. Within 1 km of the central barrow are clustered 117 lower mounds (37.6 barrows/km²). No other locale in Sønderhå had such a prominent barrow or such a concentration of other barrows. Within the parish, an average square kilometer has 11.4 barrows. What were these barrows? They mark clusters of burials, cemeteries for distinguished people, who were most likely organized into family lines of warriors and chieftains who competed for control of land and wealth (Chapter 13).

Rich Early Bronze Age burials have been excavated from the barrows of Thy (see, for example, Olsen 1992). Male burials frequently included beautifully crafted, chiefly swords or simpler ones used for fighting; status was marked by these weapons and symbols of destruction (Kristiansen 1982). During the periods of Montelius II and III throughout Denmark, wealth in the male burials was most clearly marked by the quality of swords and other metal objects. Until later in the Bronze Age, starting late in Montelius III, female graves included few metal items (Levy 1982, 1995).

Early Bronze Age society was most likely organized as simple and unstable chiefdoms. Households differed significantly in size, and burials were similarly ranked by status. Chieftains were now more clearly differentiated from other warriors. Territories were defined by barrow cemeteries, and an expanding long-distance exchange provided wealth for the chieftains and their warriors.

During the *Late Bronze Age* (1300-500 B.C.), the settlement pattern changed

little, although an apparent increase in Late Bronze Age houses suggests an expanding population. Farms with a main house and exterior work areas were still located, built, and lived in for only a brief time, and sites often contained many individual houses that represented the shifting locations of farm buildings. Differences in houses, and in burial monuments, ceased to be as strongly marked, suggesting decreasing social differentiation. Houses were positioned in very similar locations, often in the same places as the Early Bronze Age farms. Thus at Bjerre, Legård, and Vilhøj, sequences of farm buildings stretch across the Bronze Age. The impression is that the underlying family farming unit continued largely unchanged, and the continuity in Late Bronze Age house locations from earlier in the Bronze Age suggests also that the subsistence farming economy remained little changed. At the same time, the political economy was transformed ([Chapter 12](#)), as the amount of wealth in metals decreased dramatically.

Following the emergence of simple chiefdoms during the Early Bronze Age, the social organization of Thy seems to have devolved into a more egalitarian society emphasizing individual farms without strong local leaders. Thy appears to have become marginal to international exchanges. At the same time, the subsistence economy in Thy was productive enough to support modest population growth. Unexpected perhaps, the distribution of households as scattered single farms does suggest little concern with warfare; the regional

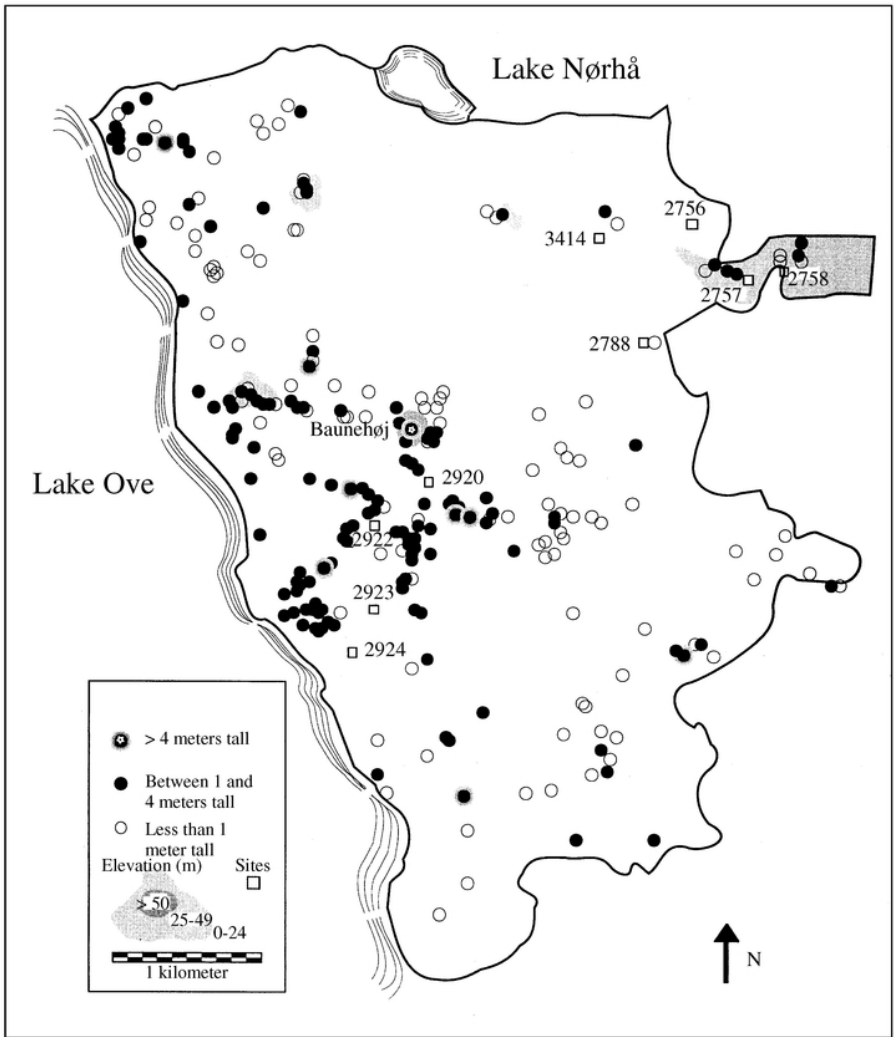


FIGURE III.2 Map of Sønderhå Parish, Thy. The barrows less than 1 m high have been plowed over, (prepared by John Steinberg)

peace originally established by the chieftains of Thy may have remained intact even after the region's hierarchy collapsed.

Human activities in Thy caused fundamental long-term transformations to the vegetation and subsistence resource base of the region. Forests were cut down and replaced, first by farmed openings and eventually by extensive grasslands. The pattern of settlement shows swings of increasing population during agricultural expansions, followed by stability in Early Bronze Age and then continued expansion. The patterns of population and subsistence, although related, do not follow a simple sigmoid increase and stabilization. Rather, the long-term cycling in population appears to reflect the shifting

dynamics of the political economy. Interestingly, a marked increase in political complexity during the Early Bronze Age was evidently a time of population stability; population, however, then expanded during the Late Bronze Age when social differentiation appears to have diminished. The evolution of social stratification is evidently a political process not resulting directly from changing adaptation or local regional productivity.

The Danish case illustrates how the development of wealth finance in chiefdoms is grounded in the underlying political economy through developing systems of land ownership and the creation of an export economy in special products ([Chapter 12](#)). These items of export and import must be controllable by the chieftains, a situation that I maintain is always problematic. Ultimately, the successes and failures of the local chieftains relied on factors of international trade beyond local control, creating a pattern of rapid expansion and decline in chiefly power and the mechanism of legitimation. The production of ideologies of rule was an important part of complex societies, and the special role in distinguishing individuals for network strategies of power is well illustrated here. The nature of the political economy and its linkage to the subsistence economy provides a telling contrast to the staple-based finance chiefdoms of the Hawaiian Islands.

The Bronze Age Economy of Thy

Finance in a Networked Chieftdom

In Thy during the Bronze Age, chieftdoms rapidly flowered and declined. Their histories illustrate the dynamic relationships between subsistence economies and developing political economies based on network strategies for power. From an unremarkable beginning in the Neolithic, the chieftains of Thy mark themselves with new wealth and weapons that suggest an incipient stratified society dominated by a chiefly and warrior elite based on economic and military successes. The Early Bronze Age burials of Thy contained some of Europe's most beautiful swords and other prestige goods crafted from imported bronze and gold ([Chapter 14](#)). The vaults of the National Museum in Copenhagen and the Thisted Museum in Thy contain over a hundred and fifty lots of Bronze Age finds from Thy—fine swords, daggers, fibulae, arm rings, and other jewelry, items mainly from Montelius Periods II and III (roughly 1500 to 1100 B.C.). Today as you drive through the landscape of Thy, Early Bronze Age barrows stand against the sky along the high ridges, bluffs, hills, and rolling fields. Built primarily in a few generations, over two thousand barrows survive, among the highest density anywhere in Denmark or elsewhere in Europe for that matter (compare Wessex in England, see [Chapter 13](#)). The chieftains and warriors who received such treatment at death were distinguished people.

But the agricultural base of Thy was unexceptional, and the region was removed from Europe's main social developments. What were the factors that supported the development of chieftdoms in Thy during the Early Bronze Age and why did those chieftdoms collapse so fundamentally? Based on the archaeology conducted by the Thy Archaeological Project (TAP) and the Thisted Museum, the story of the Bronze Age chieftdoms of Thy appears to tell of how, for a short time, chieftains were able to develop and control a dynamic export economy in cattle products that supported the importation of bronze, the primary medium used to fashion an ideology of chieftain rule ([Chapter 14](#)). These were networked chieftdoms, but unstable chieftaincies (Redmond 1998). Chieftains of Thy developed local production of exports, especially hides, in

exchange for the bronze and gold that were fabricated by attached specialists into weapons and wealth used to attract warrior retainers and eliminate competing chieftains. Theirs was a fragile political economy that depended on a transformed local subsistence economy. By the Late Bronze Age, conditions had altered, and Thy devolved to a fairly simple subsistence economy with some significant differences from earlier periods.

Bronze and the Bronze Age

V. Gordon Childe recognized that the European Bronze Age was a time of fundamental economic and political change: "The Beaker-folk was a principal agency in opening up communications, establishing commercial relations, and diffusing practices of metallurgy" (1957: 222). For the Iberian Copper Age, at the settlement of Los Millares in southeast Spain, Childe (1957: 270) thought that foreign groups seeking ore and manufacturing metal wealth introduced more complex societies into western Europe. During the subsequent Bronze Age, metalsmiths of Europe manufactured new weapons of war, jewelry for personal display, and sickles for intensified agriculture. According to the general model, specialization released productive energy, as proposed by Adam Smith, and formed new relations of production that concentrated wealth, as proposed by Karl Marx. As discussed in [Chapter 6](#), Childe's ideas fit comfortably within a commercial model of specialization, economic development, and the emergence of complex societies.

The role of metal continued to be emphasized by later scholars. Social archaeologists, like Colin Renfrew (1973), suggested that population pressure created by an expanding Neolithic economy actualized competition and warfare between local groups that caused territoriality and chiefdom formation ([Chapter 13](#)). The Bronze Age barrows of England and Denmark were interpreted as marking land ownership and chiefly status. Within those barrows were interred the chiefs with their daggers, swords, and items of personal decoration.

Arguing from a structural Marxist perspective, Friedman and Rowlands (1977) suggest that the political economy of northern Europe during the Bronze Age was based on "prestige-goods exchange." They emphasized the dynamics of translocal networks between emergent chiefs. These networks involved the exchange of wealth objects, chieftain to chieftain, in separate spheres of exchange through which prestige was contested (Renfrew and Shennan 1982). Chiefs and leaders were seen as building personal and group prestige by establishing networks of exchange relationships. Objects flowed

through these networks, no doubt along established paths of exchange similar to the *kula keda* of Melanesia (Campbell 1983; Chapter 2). Chiefs built alliances, attracted followers, arranged political marriages, and established their reputation as men of renown. Renfrew and Cherry (1986) characterized such political relationships as "peer-polity interaction," by which local chiefs competed with and emulated each other across an immense arena of political action. Modified versions of the Friedman-Rowlands-Renfrew-Shennan-Cherry model have influenced later concepts of network strategies (Blanton et al. 1996; Chapter 1) and of wealth finance, as discussed in [Chapters 8](#) and [9](#).

As an example of the importance of prestige-goods exchange, Bradley (1984, 1991) considers how commodity flows in bronze, in contrast to earlier stone objects, formed the basis for the emergence of Bronze Age chiefs in southern England. Metal was imported from Europe and crafted into the metal weapons and wealth that materialized power relationships in dramatic and unambiguous ways ([Chapter 14](#)). Those who possessed the wealth and could offer it to followers were political players. The obvious problem, as seen during the Late Bronze Age when the international exchanges of bronze shifted, was that those chiefs who depended on wealth finance had little control over its supply and value. Thus a shift in the long-distance exchanges of metal may have destabilized the Wessex chiefdoms (Bradley 1984). Internal control over production by attached specialists offers alternatives ([Chapter 6](#)), and, for Denmark in the Early Bronze Age, the complicated technical processes involved in the manufacture of bronze swords permitted control over these symbolically charged objects (Kristiansen 1987).

How important were the manufacture and flows of metal wealth to the emergence of complex societies in Europe? As argued in this chapter, wealth finance alone is always unstable. In Iberia, although metal marked social status, wealth finance was inherently problematic (Gilman 1987). In southeast Spain, the sustained development of complexity rested more on corporate strategies involving the intensification of irrigation agriculture with the metal being used to store and symbolize wealth. The improvement of land by irrigation, terracing, fencing, and the like progressively bound farmers to their agricultural plots, especially where irrigation was practiced. By their warrior might, chiefs could assert ownership and then extort a portion of a land's produce as rent. This surplus was used by chiefs to develop additional sources of power by attracting and arming warriors and by elaborating an ideology of social stratification and warrior valor ([Chapter 14](#)). In Portugal, where intensive irrigation agriculture was not used, perhaps for ecological reasons, the ranking in Bell Beaker society rested more on network strategies using wealth finance; however, the basis of power was unstable and ranking short-lived. The fluidity of power described matches a model of chieftaincy rather

than that of a staple-financed chiefdom (compare Redmond 1998). In northern Europe, the network of competing chieftains fit the model of the Germanic Mode of Production, in which independent farming households were controlled precariously by a warrior elite (Engels 1972 [1884]: 192-216; Gilman 1995).

Conforming well to this Germanic Mode, the local Bronze Age chieftains of Thy, Denmark, appear to have dominated the region's subsistence economy based on independent farms. Long-distance commodity flows provided weapons to dominate the region's cattle industry and provided rich personal decorations to symbolize personal distinction. The local economy was radically transformed to produce exports of hides and amber to pay for imported bronze, the raw material transformed into wealth and weapons by gifted craftsmen attached to the chieftains. What is both dramatic and telling is the degree to which the local subsistence economy, controlled through ownership of land, was altered to support the emerging political economy and network relationships of power.

The Changing Economy of Prehistoric Thy

To understand the long-term economic development through the Bronze Age of Thy, I consider processes inherent in the subsistence and the political economy and how these processes were tied together to create an economic organization that was quite different from the corporate chiefdoms of the Hawaiian Islands and of the Andean highlands. The economy of any society is both an adaptation to and an exploitation of a region's environment. I begin with a look at the long-term environmental alteration of Thy, as reconstructed by changes in the pollen diagram. These changes resulted from intended and unintended consequences of many economic decisions of farmers and chiefs, and each change altered the calculus of future options. The prehistoric farmers and chiefs of Thy experimented with controlled and uncontrollable processes for intensification that transformed their environment and the possibilities for their lives.

Population Growth and Anthropogenic Changes to the Environment

Significant to an economic analysis of subsistence production is to describe the distribution of resources in a region's environment and how these resources

changed because of global climatic factors and local anthropogenic impacts. For Thy, recovery and analysis of pollen cores allow the reconstruction of the region's environment as it changed through prehistory. I rely on the primary study by Andersen (1993, 1995) and on Steinberg's (1997) interpretations of settlements, dated finds, and the pollen record.

Following the retreat of the Pleistocene glacial ice cap, a mixed high forest of lime, elm, oak, and beech dominated Thy. Commencing soon after 4000 B.C., farmers of the Funnel Beaker Culture occupied the forests of Thy. The pollen record documents continuing forest stands, but with species indicative of secondary growth (birch and hazel) that would have succeeded agricultural clearance and farming. Trace amounts of cereal pollen have also been found. In a mosaic pattern, locales were cleared, while others returned to forest fallow or remained forested. Andersen suggests that the subsistence economy was based on extensive "shifting coppice agriculture, in which secondary coppice woodland [indicated by increases in hazel, bracken, and mugwort] was used for short-term cereal cultivation and subsequent [animal] grazing" (1993: 91). Population was fairly widely distributed as evidenced especially by Early Neolithic polished flint axes recovered from 36 of Thy's 65 parishes. Suggesting a fairly low population density, settlement sites are rare, however, and limited to several hamlet-sized concentrations of flint debris and one causewayed enclosure. The axes from the Museum's collections were produced from local field and mined flint, and were used for both forest clearing and as items of wealth and sacrifice. Hoards of axes that have been found in wet (probably sacred) places like springs and bogs usually contain unpolished, unfinished ones.

About 2900 B.C. during the Middle Neolithic, a rapid and profound economic and environmental change took place—the secondary forests were rapidly cleared away (most likely with fire) by groups belonging to the Single Grave and later Dagger Period Cultures. Grassland species expanded to about 24% of the pollen, suggesting an increase in grasslands that continued to the end of the Neolithic (1700 B.C.). Broad tracts of pastures appear to have been created for animals, with some cereal farming around the settlements. The fairly light sandy soils of western Jutland and the richer soils of Thy were evidently well suited to mixed herding and farming. Population may have declined initially in the Middle Neolithic and then increased somewhat through the period. Single Grave barrows have been found in 9 of the 17 study parishes, the diagnostic battle axes occur in 13 of the 65 parishes, but settlements are very rare. To date, only one Single Grave camp has been securely identified (Liversage 1987). Based on TAP settlement survey data, the Late Neolithic, Dagger Period settlements then become quite common, having been identified in 10 of the 17 parishes. The distinctive daggers have been recorded from 51 of

65 parishes. Population must have grown substantially.

During the Early Bronze Age (1700-1000 B.C.), grassland species more than double to 54% of the pollen. At the same time, barrows become ubiquitous; they occur in all of the 17 study parishes and in virtually all other locations in Thy. I believe that the expansion in barrow construction corresponds to the creation of extensive pastures. The expanding distribution of barrows has often been thought to signal an expanding population size that required the larger productive base; however, little supporting evidence exists for the population growth. The frequencies of Early Bronze Age (EBA) settlements, admittedly difficult to identify, are scattered farms. As we searched for EBA settlement locations to excavate, few could be securely identified. It seems that the increase in open lands with barrows did not result from an expanding human population. What was going on here? I suggest that a change in the *focus* of productive activities, away from cereal farming and toward animal raising, was the cause. As animal numbers increased, the size of pastures would need to have expanded, resulting in an overall expansion in cleared and owned land. As discussed for southern England ([Chapter 13](#)), the barrows may have marked pasturelands owned by the chieftains and warriors who expanded production as part of the political economy that they dominated (see later discussion).

Then late in the Bronze Age (1000-500 B.C.), the animal-based economy shrunk substantially, as the amount of grassland species declined to 35%. At the same time the percentage of heath and secondary forest species increased somewhat. Perhaps overexploitation of the upland soils and the sand dune areas along the western coast resulted in a degradation of former pastures. Population, however, did not decline. Although dating is not always secure, rescue surveys and excavations have located fairly large numbers of Late Bronze Age (LBA) houses, suggesting a stable or increasing population. Thus the loss of grasslands did not result from a decrease in population but from another shift in economic focus, away from animal herding and toward a greater reliance on intensive cereal agriculture. Concurrently, new construction of barrows ceased, although the earlier barrows continued to be prominent in the landscape and were used for secondary burials.

In summary, a long-term intensification in the subsistence economy supported small and fairly stable farming communities. Population increased as follows: in the Early Neolithic, with the introduction of agriculture; in the Late Neolithic, with the expansion of a mixed farming-herding economy; and in the Late Bronze Age, with a more intensive farm economy. Counter to the long-term trend of modest and punctuated population growth and intensification, a dramatic increase in animal herding occurred in the EBA. The trend sketched out by the pollen record is further supported by an analysis of the subsistence economy documented through excavation.

The Subsistence Economy

Evidence of long-term intensification in the subsistence economy in Thy is available from an analysis of the ecofacts (the botanical macrofossils and bone remains) and the artifacts (tools and manufacturing debris) recovered in the excavations of prehistoric households. As in the Andean case, the household is the primary unit of analysis for TAP. The goal of a domestic unit is often to be self-sufficient, maintaining as little dependency on outside groups as possible ([Chapter 1](#)). The patterns of economic organization of households in societies can range across a spectrum from the Domestic Mode of Production, with its self-supporting production for consumption, to the more specialized households geared to production for exchange. In the Danish case, separate farms combined subsistence strategies with an apparent goal to maintain a high degree of self-sufficiency. The expansion of cattle production in the Early Bronze Age economy was, however, unexpected.

The Late Neolithic Period

Late Neolithic settlements were isolated farms or perhaps small hamlets with a few houses and occasionally a communal structure. Settlements appear to have been built on high ground with good visibility, perhaps for defense. Houses were small and semisubterranean. No obvious difference in size or status is apparent between houses. Baseline Late Neolithic (LN) household data suggest that cereal farming and animal husbandry were part of a mixed subsistence economy practiced by households (Earle et al. 1998; Kelertas 1997). The best evidence for subsistence during the Late Neolithic derives from macrobotanical remains that have been analyzed by Kelertas (1997). Charred seed and other plant remains, although fairly rare, were recovered routinely by soil sampling and flotation of all cultural layers and features.¹ Cereals from these LN household contexts were emmer and more rarely spelt wheat and barley. Seeds from nondomesticated plants were also recovered. Most common were various weedy plants typically found in cultivated fields, further documenting the importance of cereal farming.

The ratio between weed seeds and cereals can be used to indicate the balance between crop production and food consumption ([Table 12.1](#)). Along with cereals, weed seeds are often transported into a settlement at harvest and must be removed by winnowing and further cleaning. Seed ratios high in weeds are thought to document early stages in plant production (associated with cleaning the recently harvested crop) and those rich in cereals are thought to document clean storage or final consumption. With the exception of

Structure 3 at Thy 2758, the LN ratio of weed to cereal seeds varies little (1.6-7.1), although the ratio is expectedly higher in the trash fill than on the floors. Similar ratios in all three houses suggest that each was involved similarly in plant processing and cereal consumption as would be expected for generalized, subsistence-oriented households.

TABLE 12.1 Ratio of weed seeds to cereals for various late neolithic and Early Bronze Age contexts excavated by TAP. Recovered by routine flotation of features and cultural layers (Earle et al. 1998: Table 2)

		Context	Ratio
Late Neolithic	2756	house fill	6.2
		house floor	5.2
	2758	house 1 fill	7.1
		house 1 floor	3.2
		house 2 fill	4.4
		house 2 floor	1.6
		structure 3 fill	0.1
		structure 3 pits	0.02
Early Bronze Age	Bjerre Site 6	outside	1.3
		pits	1.0
		inside	0.1
		floor	0.3
	Vilhøj	Red floor	4.1
			23.2

Structure 3 is distinctive. It has lower weed-cereal ratios (0.02-0.1) and was apparently not a domestic structure. Across the floor was an atypical pattern of many small fire features suggesting perhaps a special-purpose building associated with communal activities. For this structure, the one calibrated radiometric date (1670 B.C. ± 210) is very late in the Late Neolithic or even early in the Bronze Age (Earle et al. 1998). The date from this structure was later than the radiocarbon dates from other structures on the site.

The specific weeds recovered from the Late Neolithic settlements appear to indicate fairly intensive tillage practices. Weed seeds were dominated by annuals and by species associated with nitrogen-rich soils. These results were unanticipated; the local environment was quite intensively farmed using a short fallow (suggested by the dominance of annuals) and with sustained fertilization perhaps by manuring to maintain nitrogen-rich soils.

Fairly intensive tillage is further documented by plowing, an intensive form

of soil preparation (Boserup 1965). At Thy 2758, plow marks were described cutting into Structure 3 (protected by the subsequent construction of an EBA barrow) and in the hollow to the south of the site (blanketed by sheet deposition). These marks were created by a simple wooden ard, a plow frame with a pointed wood blade that cut the soil (but did not turn it) in preparation for planting. Presumably these plows would have been dragged by oxen, although horses or humans are also possible. The distinctive pattern observed at Thy 2758, and at most places with ard marks, has sets of parallel lines crossing each other almost perpendicularly. A plowing would be completed in one direction and then a second plowing would be made across the earlier one. Plowing is an Early Neolithic farming practice in Denmark (Steensberg 1973; Olausson 1987). Perhaps it was needed to farm locales close to settlements that became surrounded by grasslands for animals. The relatively high labor inputs required to plow may have further encouraged manuring (as documented by the nitrogen-rich weed species). Manuring would have increased production and thus limited the sod needing to be broken by plow.

Farming is also indicated by the occasional flint sickles, presumably used to harvest cereals (Table 12.2). The large flint axes, however, that were used earlier for forest clearance were not part of the LN assemblage. Their absence supports the conclusion that farming had shifted away from forest clearing and toward grasslands. Surprisingly, quern stones, used to grind cereal seeds, were not found in our excavations at Thy 2758 or other LN settlements excavated in Thy. Their absence contrasts to the fairly large number of these grinding stones recovered from the contemporaneous LN site of Myrhøj, located east of the Limfjord (Jensen 1973). Why? Perhaps the grinding stones were being recycled for other uses such as being broken up for cooking stones; a number of worn-out quern stones were used as part of a LN grave in southern Thy (J.-H. Bech, personal communication). Or can we postulate that animal husbandry, in contrast to cereal farming, may have been more important in Thy than elsewhere in Denmark?

Animal husbandry was presumably an important part of the Late Neolithic subsistence. Because of soil conditions, animal bones were not recovered from the Late Neolithic excavations in Thy; however, we presume that animals were an important part of the economy based on extensive grasslands documented in the pollen record and by specific elements of the artifact assemblage. A standard (although rare) LN ceramic form was the sieve, an open earthen jar with small holes drilled in the base. Analysis of the lipids absorbed into one of these sieves showed the presence of goat cheese, indicating dairy goats during the period (Kelertas 1997: 126). Flint blades and scrapers were fairly common in LN lithic assemblages, and may have served for animal butchering and/or hide processing (Table 12.2).

From the different Late Neolithic sites excavated and sampled by plowsoil work (Steinberg 1996, 1997; Earle et al. 1998), no evidence exists for settlement specialization. All settlements appear to have been involved in a similar range of householding activities. The ratio of tools (consumption activities) to flint waste (stone toolmaking) was fairly uniform, about 1.9 tools per 100 flakes. Unlike the pattern described for the EBA, no sites were found that had unusual concentrations of flint working debris and unfinished tools. We concluded that little specialization existed in lithic production.

Our conclusion is, however, initially counterintuitive. Some stone tools, especially the finest LN daggers, would appear to have been produced by highly skilled flint knappers (Stafford 1998), and trade in these fine objects would seem likely. Such objects were, however, very rare in the archaeological record. Although most Dagger Period contexts excavated by TAP contained flint daggers, arrowheads, and/or dagger-shaped strike-a-lights, these objects were most often not of exceptional quality, and so could have been produced by most flint knappers. In other words, alternatives existed for these rare and special objects. Since flint was ubiquitous, members of a household could (and did) forgo the best ones and manufacture substitutes for themselves. Even the finest Type IV daggers show a normal distribution of variability in metric characteristics, suggesting that multiple knappers were involved and that specialization was not highly elaborated (Steinberg and Pletka n.d.).

As discussed in [Chapter 6](#), some level of specialization and intersettlement exchange was likely for ceramics, especially for the more highly decorated Bell

TABLE 12.2 Distribution of flint flakes, cores, and formal artifacts across Late Neolithic cultural contexts excavated by TAP. The counts are standardized by the number of units excavated (*Earle et al. 1998: Table 1*)

Site	Flakes	Cores	Hammers	Scrapers	Blades	Sickles	Daggers	Projectiles	Units Excavated
2756	28	0.60	0.03	0.6	1.00	0.00	0.00	0.10	31
2757	6	0.14	0.07	0.6	0.10	0.00	0.14	0.00	14
2758	House 1	62	0.80	0.19	0.4	2.10	0.05	0.25	36
	House 2	54	0.85	0.14	0.09	0.30	0.00	0.14	7
	Structure 3	36	0.18	0.00	0.1	0.00	0.18	0.00	11
2920	5	0.00	0.00	0.1	0.00	0.00	0.00	0.00	9

Beaker forms. A high percentage of the ceramics were decorated, suggesting considerable investment in these utilitarian objects as status symbols. Future work is needed to investigate specialization and commodity flow in LN ceramics; however, I see no evidence that highly skilled crafters produced even the most elaborate ceramic vessels. Rather, local people made such decorated pottery vessels that were exchanged among neighboring farming communities,

similar to what was described for highland Peru ([Chapter 10](#)).

With existing data, the economy of Thy during the Late Neolithic appears to have been fairly unspecialized, and commodity flows were limited. The primary difference among settlements of the LN was in the total amount of flint waste, indicating the numbers of people or lengths of time that sites were occupied (not the types of specialized activities that took place there) (Steinberg 1997).

Let us assume for a moment that length of occupation determined the amount of flint waste recovered from LN settlements. If this were true, the plowsoil evidence indicates that some sites were occupied for long times and others quite briefly. I believe (contra Bech, personal communication) that a seasonal distinction may have characterized Late Neolithic settlement systems in Sønderhå: (1) primary pithouse farms or small settlements, like Thy 2758, were occupied by several generations primarily during the cold winter months; and (2) sites with lower density lithic remains were occupied in the summer when the animals were being moved around among pastures. A nearly continuous scattering of worked flints, dating either to the Late Neolithic or Early Bronze Age, has been identified for the higher areas of Sønderhå parish above Lake Ove. This broad spread of "off site" flint waste is quite different from that described for the well-defined settlement sites in Bjergene. Limited excavation at several concentrations recovered flint working debris, hearths, and scattered post holes, but no evidence of pithouses. Pithouses would have been cramped and dark places, known cross-culturally to be typically winter residences (Oilman 1987).

Historically the higher zone in Sønderhå was heath, and Bronze Age barrows are numerous. We had expected to find Bronze Age settlements proximate to the barrows, but we did not. I believe that higher lands here were pasture and that people built seasonal structures when they accompanied animals to pastures. A series of small Neolithic sites without pithouses have also been recovered from the nearby eroding coastal dune areas of Lodbjerg, Thy; these sites may well have been summer camps associated with seasonal pastures (Liversage and Robinson 1995). Thus differences among LN sites may represent seasonal differentiation and not economic specialization.

The subsistence economy in the Late Neolithic was geared to local subsistence production based on mixed farming and herding in an open environment. Farming was labor-intensive, requiring plowing to break the mat of roots established in the grass-fallow fields close to the permanent pithouses. The main indications of ownership patterns were the permanent structures themselves that were placed conspicuously in the landscape, sometimes where barrows were later built (Earle 2001). Annually, there may have been some movement of the animals to pastures, but the distances involved would have

been fairly short, less than 10 km. Since construction of barrows that might have defined owned pastures later were not typical of the Late Neolithic, individual farmers may have been able to move their animals within fairly large commons. Households were generalized with little indication of specialization. I would argue that all subsistence produce and virtually all craft goods were derived locally, thus requiring only limited exchanges between neighboring settlements.

The Early Bronze Age

The standard social unit of the Early Bronze Age was the farm, typically located at middle elevations fairly close to agricultural fields. The pastures and associated barrow cemeteries were located above the farms, but at no great distance. The houses associated with different farms varied considerably in size, from as small as 10 m in length to over 30 m. We can assume that larger houses were warrior and chiefly farms and smaller ones were commoner or perhaps cottager farms. These distinctions would mirror the differences in wealth seen in the burial record. Most likely only the chiefs and warriors received burial in the barrows.

Household data have been recovered and analyzed for three Early Bronze Age settlements: Bjerre (site 6), a warrior house;² Thy 2788, a small commoner or cottager house; and Vilhøj, an EBA work surface. Two large chiefly halls were also excavated at Legård in Sønderhå parish, but the analyses have not been completed of their botanical data. The evidence available indicates that into the Early Bronze Age mixed cereal farming and animal husbandry continued to be practiced by the households (Earle et al. 1998). Changes, however, took place, including more cereal crops, increasing cattle herding, and emerging household specialization.

Subsistence continued to involve cereal farming. Rich macrofossil botanical evidence recovered by flotation yielded an increased number and variety of cereals that were being cultivated and consumed (Kelertas 1997). Emmer wheat and barley continued to be the most common varieties, and einkorn and bread wheat were also found. The expansion of cereal varieties in Thy may be significant or simply a result of better botanical preservation in the EBA assemblage; both have been found elsewhere in Denmark, dating earlier to the Early Neolithic. The representation of weedy plant species that are associated with cultivated fields offers further documentation that farming was common.

The ratio of weed seeds to cereals was more variable for the three EBA sites than for the LN contexts (Table 12.1). The warrior farm at Bjerre site 6 showed little evidence of food processing inside (0.1-0.3) or outside (1.0-1.3) the house.

This could indicate that the farm received food as rent payments from other farms (Kelertas 1997), or that activities at the higher-status farm were more complex in their spatial organization with processing of the incoming cereal crops being removed from the main house area. The prepared floor excavated at Vilhøj indicates a different pattern—a more generalized set of food-related activities (4.1)—and the small house at Thy 2788 was heavily involved in seed cleaning and little in consumption activities (23.2). Could the differentiation between the chiefly and commoner houses represent a rentlike (cottager) practice at the latter? Such a conclusion would, of course, require a much more robust data set to offer conclusive results.

Evidence for intensive farming practices continues to be found in the Early Bronze Age. Weed seeds from the EBA remain dominated by annuals and to a lesser degree by species associated with nitrogen-rich soils. Especially at Bjerre, wet-land perennials, often with low-nitrogen associations, are found in pits and other contexts, indicating the use of peat as a fuel (Bech 1997; Huston 1999; Kelertas 1997; Robinson et al. 1995). Plow agriculture remained important, as documented by ard marks cutting into Bjerre sites 2 and 6 following abandonment. Later in the Bronze Age, extensive field areas occur at Bjerre, but farming of the seasonally wet grasslands began in the EBA.

Farming is also documented during the Early Bronze Age by the fairly common occurrence of asymmetrical flint sickles (Fig. 12.1). Microwear on sickles from Bjerre site 6 shows a distinctive silica gloss, indicating that they were used to harvest cereals; in a sample of 40 used stone tools, 12% showed evidence of this silica gloss (Aperlo 1994). Sickles were also recovered routinely at Thy 2788 and from Vilhøj, but not at the chiefly hall at Legård. Quern stones, used to grind cereals, were found occasionally as three fragments from Bjerre site 6 and a saddle quern from site 3 (Bech, personal communication).

Animal herding, especially of cattle, was definitely an important part of the Early Bronze Age farm economy. The expanded amount of grasslands indirectly points to the importance of animal husbandry, and several architectural features appear to have served domesticated animals. Inside one KB A Period II house at Bjerre site 2, a symmetrical pattern of parallel post lines may have been stalls (Bech 1997), and in the large chiefly hall at Legård a central room with 100 m² of space had similar stalls for 12-16 animals (Bech and Mikkelsen 1999). Also at Bjerre and at other EBA settlements, circular settings of posts are thought to have been animal pens (Bech 1997; Bech and Mikkelsen 1999).

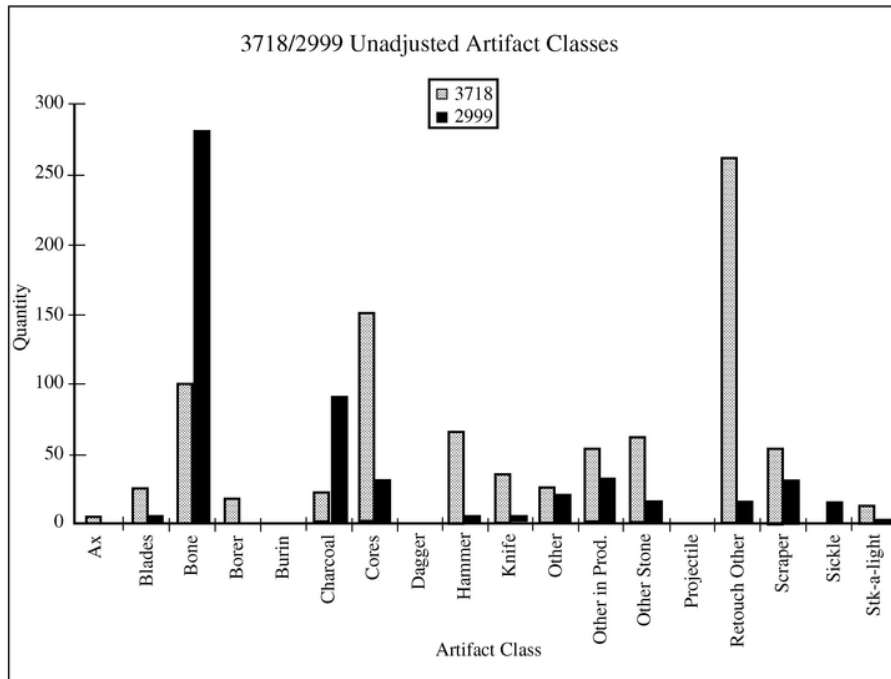


FIGURE 12.1 Bar chart of artifact quantities contrasting Early Bronze Age Bjerre site 6 (2999) and Late Bronze Age Bjerre site 7 (3718).

What animals were being raised and why? Soil conditions at Bjerre site 6 permitted reasonable preservation of animal bone (228 fragments, 2536 g). The predominance of the bone has been identified as cattle (86%), with lesser amounts of sheep or goats (3%), one wild deer fragment, and no pig; and 11% was unidentified (Nyegaard 1994). Dominance by a single species is atypical of subsistence economies, because farmers want a balanced mix of sheep, goats, cattle, horse, and pig to diversify their risks and to meet the multiple product needs of the farm.

But during the Early Bronze Age at Bjerre, cattle were the bulk of the herd. A similar pattern of animal husbandry has been observed at settlements along the Dutch North Sea coast of western Friesland. Bone assemblages were mainly cattle, animal stables were common within EB A houses, and some animal pens like that at Bjerre have also been described (Bech 1997). Why did the raising of cattle become the focus of the farming economies in Thy and elsewhere on the edge of Europe's expanding Bronze Age economies? My contention is that, with the expansion of long-distance exchanges seeking metal, the economy became focused on the cattle herds to provide exports.

The importance of animals in the economy is further supported by the lithics recovered from Bjerre and other EBA settlements. The lithic assemblages typically contain blades, knives, and modified flakes that would

have served for animal butchering (Fig. 12.1). At Bjerre site 6, 21% of the 40 used tools analyzed show microwear damage consistent with butchering (processing of meat/bone/antler)(Aperlo 1994). More common are scrapers; these are fairly simple, thin and broad flakes, about 5 by 5 cm, with a distinctive retouch along one edge to create a nearly vertical scraping edge. Microwear damage on the scrapers indicates that they were routinely used to prepare hides; 40% of tools at site 6 showed hide-working microwear (Aperlo 1994).

Did specialization exist in stone tool production during the Early Bronze Age in Thy? Settlements excavated and sampled by plowsoil work document some dramatic difference in the overall amount and kind of flint knapping activities at settlements (Steinberg 1996, 1997; Earle et al. 1998). All households had some domestic stone tool manufacture for subsistence use. At the small, commoner house of Thy 2788, for example, a high density of both stone tools and lithic debris was recovered immediately associated with the house. Tools included a typical EBA mix of the asymmetrical sickles, scrapers, and cutting tools, closely associated with manufacturing debris (i.e., the flakes). This association suggests to me generalized work spaces immediately near the house for knapping of simple stone tool use for a variety of cutting and scraping tasks. In contrast, at the warrior house of Bjerre site 6, flaking debris was relatively rare. In the western end of the house, a cache of suitably sized and shaped flakes were pre-forms to make scrapers, and concentrated flake debris nearby suggests knapping within the house (Earle et al. 1998). At nearby Bjerre site 3, asymmetrical sickles were made in an area about 10-12 m removed from an EBA commoner house.

At the settlement of Vilhøj, another pattern was evident. Plowsoil sampling recovered an exceptionally high density and total amount of flint debris estimated at over 1,000,000 flakes and 7,000 unfinished asymmetrical sickles discarded during production (Steinberg 1997). Steinberg estimates production from this settlement to have been in the tens of thousands of sickles, and he believes that a neighboring settlement has similar totals for sickle production. Three lithic work stations were preserved in cultural layers below the plowing level, one in a prepared red clay layer that may have been an outbuilding where knapping and other activities took place. Bech (personal communication), however, believes that the Hint knapping was done outside, stressing the lack of post holes or other features that would identify the layer with a structure. The flint working location associated with the red layer was 15 m from the nearest EBA house, a pattern similar to that of Bjerre site 3.

We can conclude that the production of asymmetrical sickles during the Early Bronze Age in Thy was highly variable and represents settlement specialization. At Thy 2788 and reasonably at Bjerre, households provided

sickles for themselves. Some settlements show no or very little evidence for lithic manufacture, whereas at other settlements, like Vilhøj, large-scale production of sickles was evidently geared to exchange (Steinberg 1997).

And how about specialization in ceramic manufacture during the Early Bronze Age? Here the evidence is as yet unclear. The importance of ceramics as status-defining objects appears to have been replaced by metal. Most of the EBA ceramics were low-fired, large storage vessels that would have been very difficult to move. The assumption is that these vessels would have been manufactured locally, perhaps on each farm so as to minimize the chance of breakage. Specialization in the EBA may thus have significantly declined for ceramics. Some pieces are much better fired, and it is possible that these were produced by local specialists, but research is presently lacking. As discussed in [Chapter 9](#), two intersecting EBA pyrotechnic technologies may have existed in ceramic and metal industries, such that firing techniques used for metals may have improved some ceramic vessels. Could these have been produced within the same specialized households?

The subsistence economy in the Early Bronze Age shows both continuity and change when compared to the preceding period. Farming continued to be a mixed economy of farming and animal raising, and farms were evidently quite self-sufficient. Although specialization and commodity flows in the local economy were not extensive, specialization appears to have increased selectively and dramatically in the flint sickles. There appears to be little reason for these changes based on economies of scale, and so I believe that the changes were responses to the political economy as described later. The dramatic increase in cattle may well represent production for export for long-distance trade involving the imported metals. The sickles may represent expanded opportunities for exchange created by local peace and long-distance trade relationships.

The Late Bronze Age

The economy of the Late Bronze Age of Thy appears to have continued to be based on individual farms with a mixed subsistence economy raising cereals and animals. Farms were rebuilt every generation or two, shifting somewhat in specific position (Bech and Mikkelsen 1999). Often farms continued to be found in the same general locations thus continuing holdings established in the EBA, as for example at Bjerre, Legård, and Vilhøj. Rescue work suggests that house sizes became quite uniform with median sizes about 19-19.5 m long and 6.3-6.5 m wide with about 120 m² (range 90-135 m²) of roofed area (Bertelsen et al. 1996); no large chiefly farms have been described for northwest Jutland, nor

are there other indications of social stratification. The pattern of fairly equal farms contrasts to an emergent social differentiation in island Denmark to the east.

Regrettably our analysis of the extensive macrofossil botanical remains from Bjerre site 7 has not been done, although limited finds from other LBA sites suggest that standard cereal crops continued to be raised. At Bjerre, test trenches during the original rescue investigations exposed about a hectare of prehistoric fields that date to this time period (Bech 1997: Figs. 7 and 8). Located on a raised seafloor, these fields are seen as crisscrossing ards and furrows on surfaces that have been sealed by blowing sand. The borders of a dozen irregular fields (each less than 1,000 m²) can be recognized by overlapping parallel ards and marks and occasionally by low banks. Bech (1997; compare Barker 1985) notes that the inclusion of a fairly uniform, low-density scattering of ceramic fragments and other household debris in the plow layer suggests that household trash was spread to fertilize fields. One example of pond-weed pollen recovered from a sandy LBA fields layer suggests that fields were spread with a fertilizer of peat mixed with animal dung. These practices suggest a fairly intensive form of agriculture, a precursor to the Iron Age Celtic fields found in Denmark and elsewhere in Europe (Bech 1997). As I discuss in [Chapter 13](#), such intensive field systems in England may correspond with a shift toward hill-fort settlements and a reorientation toward staple finance.

During the Late Bronze Age of Thy, mixed animal husbandry was an element of the farm economy. Although bone preservation was generally poor at Bjerre site 7, one large trash pit yielded a few bone and teeth fragments, tentatively identified as both sheep/goats and cattle. In an informative comparison between EBA Bjerre, LBA Troldesting (Bulbjerg), and Early Iron Age Smedegård, a dramatic trend shows the decreasing importance of cattle and increasing importance of sheep/goats (Bech and Mikkelsen 1999: Fig. 8). It seems reasonable to conclude that the EBA focus on cattle was already declining in the LBA, a point to which I return when discussing the region's political economy.

What evidence do we have for land ownership in the Late Bronze Age? The continuity in farm locations discussed previously suggests that a farm unit based on ownership of fields existed. Very few new barrows were constructed, and so the rather dynamic status rivalry of the EBA was gone. But the significance of the old barrows in the landscape is shown by cremations being placed as secondary burial in the mounds. Did a pattern of land ownership based on inheritance, originally established in the EBA, continue to function through the Bronze Age? Traditional land rights may have held up until disrupted by the sociopolitical transformation associated with village formation at the beginning of the Early Iron Age.

The primary evidence of household activities during the Late Bronze Age are stone tools and ceramics. The stone tools found at Bjerre site 7 are quite typical of the LBA, including several formal tool types (backed knives and scrapers) and many more opportunistic tools often made from flakes (Fig. 12.1). At many LBA sites, frost flakes were commonly used, and at others like Bjerre large Early Neolithic ax-preparation flakes were sometimes recycled as new tools. Household activities included butchering, hide preparation, woodworking, and thatch cutting. Hammerstones, no doubt used for flint knapping, were fairly common. Interestingly, sickles ceased to be found in site 7 and other LBA settlements. The backed knives are the most likely stone candidate for sickles, but their use would appear to be more general. I believe that the likely explanation for the loss of sickles in the LBA will prove to be the use of metal sickles. A bronze-encrusted crucible fragment was recovered in the LBA occupation level immediately below the house level at Bjerre site 7. This would appear to suggest that bronze production for everyday use had spread to normal LBA household contexts, such that sickles could have been produced at farms.

In contrast to the EBA, no specialized production is documented for the Late Bronze Age sites sampled. Plowsoil excavations show little variation in the density or types of tools and debris recovered. Large-scale flint sickle making, as documented at Vilhøj, ceased. Counter to Childe's expectations, it would almost seem as if the adoption of simple bronze technology actually decreased specialization in sickle production! The increased density and quality of ceramics in LBA settlements may indicate some local specialization and exchange between farms, but without further work the extent of this exchange is unclear. No evidence of specialized manufacturing has been documented elsewhere for the LBA in northwest Jutland.

To summarize, the subsistence economy in the Late Bronze Age continued a mixed economy of farming and animal raising. Land tenure may have continued little changed, although ownership of pasturelands may have been less extensive. Three important changes suggest a selective decrease in commodity flows: (1) fields around farms may have increased in size, permitting increased farm self-sufficiency; (2) animal production became more mixed and so more appropriate for diversified subsistence; and (3) activities involving stone tools became generalized across sites. I believe that the LBA economy was organized by a farm's Domestic Mode of Production; virtually all goods were probably produced and consumed at the household level, with some low-level specialization and local commodity flows. The main exception to the DMP came with the long-distance importation of metal. If bronze became quite broadly used by households for items such as sickles, how were the balancing exports produced?

The Political Economy

The political economy in Thy has documented the use of prestige-goods exchange to concentrate wealth. The pattern of development and collapse of Thy chiefdoms illustrates some of the dynamics of emergent stratification based heavily on network strategies, rather than on the corporate strategies described for Hawaii ([Chapters 4 and 5](#)) and the Andes ([Chapters 8 and 10](#)).

Across the Late Neolithic to the Late Bronze Ages, diverse objects of wealth existed in Europe, and these wealth objects were exchanged in broadly integrated, translocal networks of competition and emulation often called prestige-goods exchange. In Thy, wealth was displayed in special burial ritual, in caches, and in everyday household contexts. At one time or another, items of display included beautiful flint daggers, finely decorated ceramics, and metal weapons and jewelry. Locally produced items exported to obtain metals included amber and animal hides and doubtless other items such as northern furs, slaves, and warrior service for which no direct archaeological evidence is available. As discussed in [Chapter 14](#), throughout the time periods under consideration, the exchange of wealth was part of an international ideology of warrior societies. It was, however, only during the Early Bronze Age in Thy that chieftains successfully concentrated wealth and materialized institutions of social stratification.

The critical factor appears *not* to have been the importance of wealth. All societies have objects of value ([Chapters 2 and 14](#)), but only in some situations can potential leaders control the manufacture and exchange of those objects. The control of wealth exchange in the Danish case illustrates how difficult and unstable were network strategies and how problematic was finance based on wealth exchanges. The role of metal was apparently critical for the emergence of stratification in the EBA, but metals also proved problematic to control.

The Neolithic Age

Sketching the argument elaborated in [Chapter 14](#), a critical cultural transformation was the beginning of a warrior ideology in which male status was marked by personal weapons. During the Middle Neolithic (MN), in the transition from MN A (Funnel Beaker Culture) to MN B (Single Grave Culture), male warrior status became expressed in male burials accompanied by a stone battle axe. Women were buried with local amber beads, continuing a pattern established in the Early Neolithic. Subsequently in Thy's Late Neolithic, an emphasis on male warrior status continued to be emphasized, now as part of a broadly shared assemblage associated with the Bell Beaker

Culture. Elsewhere, Bell Beaker Culture had a distinctive warrior kit defining male burials—a dagger (often of bronze), flint arrowheads, a wrist guard, and the beaker drinking vessel. In Thy, elements of this warrior complex have often been found, but burials are rare, and daggers and other Bell Beaker elements are found commonly in domestic complexes and surface finds around settlements. At the LN sites on Bjergene in the Sønderhå parish, all houses had flint daggers, arrowheads, and diagnostic Bell Beaker ceramics; however, Thy 2758 house 1 had more status-defining objects, including nine dagger fragments and a beautiful dagger-shaped strike-a-light. The Bell Beaker style daggers of Thy replicated the form of metal daggers found elsewhere in Europe, but they were exclusively (and commonly) of local flints.

The numbers of daggers recorded by the Thisted Museum vary from location to location, concentrating in some parishes and not others (Steinberg 1997: Fig. 2.31). The distribution indicates quite general access to these objects of value; most parishes have some daggers. Variation from parish to parish may be an outcome of differential collecting or perhaps some social ranking on a local scale. As a possible analogy, in Melanesia exchange is dominated by Big Men such that regional variation in wealth reflects differential success in status rivalry (Chapter 2; Terrell 1986). Leadership in Thy was presumably not institutionalized into a stable hierarchy, although leaders may have attempted to manipulate exchange during the Late Neolithic.

Thy was beginning to be connected to an international prestige-goods exchange system. Although foreign objects were rare in Thy during the Late Neolithic, a few copper and bronze objects, including especially axes, document long-distance flows in raw materials and perhaps some finished goods (Vandkilde 1996). More importantly, the people of Thy used symbolic elements like the dagger and ceramic styles to identify themselves with the international warrior ideology of the Bell Beaker Culture.

At the same time, the local economy changed in ways that suggest the development of export production. In the Early and Middle Neolithic, amber was fashioned locally into beads found commonly in burials and likely used for personal decoration and display (Bech and Olsen 1985). The amber was locally available, being collected on the beaches of Thy and then drilled and shaped by local people into beads (Liversage 1987). During the Late Neolithic, however, no finished amber was found in TAP household or burial excavations. Rather, we found a few pieces of raw amber in normal household context (maximum of three in Thy 2758 house 1), and we recovered amber dust in several flotation samples at Thy 2758 house 2. Amber thus continued to be collected and perhaps worked locally but it ceased to be a local valuable used for body decoration. It had become an export. During Bell Beaker times, Danish amber was a foreign import to England and elsewhere in southern

Europe (Shennan 1982c). The prevalence of simple scrapers during the LN and earlier in Thy may further document the raising of cattle for hides that were becoming exchange valuables through Europe. The emerging connection of Thy society to translocal commodity flows did not, however, quickly result in the emergence of social stratification, although eventually it did.

The Early Bronze Age

In the Early Bronze Age, continuing a pattern established in the Single Grave Culture of the Middle Neolithic, male warrior status was marked by the inclusion of weapons in burial; however, the concentration of metal weapons and wealth in a few burials suggests the emergence of some social hierarchy. During the EBA in northwestern Jutland including Thy, wealth in bronze swords and gold decorative pieces was the second highest of the five Danish regions analyzed by Kristiansen (1978). The richest region was western Jutland, associated with less fertile, sandy soil. The bulk of the wealth was in metal weapons and personal decorations. Some of the most beautifully crafted swords of the Nordic style have been excavated from Thy. As Bech (1996) has argued, in the parish of Visby, for example, all Period III males for whom barrows were built may have been buried with a sword. These warriors represent a sizable portion of that parish's population. Bech believes that only perhaps 20% of the swords of Thy should be considered chiefly; the highest-status burials might include something special like a golden ring or spiral (Olsen 1992). In Thy, a few burials seem to stand out as chiefly based on both the individual quality of specific objects and the size of the burial monuments. Interestingly, the richest burials in Periods II and early III are males with their distinctive weaponry, but late in Period III the richest burials became those of women (Hornstrup 1995).³ Kristiansen (1978) notes that the amount of wear in the weapons of Thy increased significantly from Period II to III, a fact that he attributes to increasing circulation time caused by decreased metal supplies in the region.

Although metal is rarely found in EBA household contexts, presumably because house floors are usually plowed out, at the warrior house at Bjerre site 6, we recovered three bronze objects—a button, fibula, and hook. The bronze double button would originally have been part of a warrior's sword belt, and the elegant bronze fibula is similar to another found in a rich barrow grave nearby (Olsen 1992). The residents of Bjerre site 6 were evidently of fairly high status with access to wealth and international connections.

As described in [Chapter 14](#), the role of prestige-goods exchange in the emergence of social stratification depends not simply on the amount of wealth

per se, but on the ability to control (channel) its production and exchange. Control is important to an emerging social institution to monopolize political power and to guarantee value against possible inflation or counterfeit products. The shift in media (the kind of wealth, not its meaning) from stone to bronze was critical to this control in the emerging political economy ([Chapter 14](#)). When the existing warrior ideology became materialized in metal, the prestige-goods exchange became controllable through the production of wealth by attached specialists, through the long-distance exchange of metal, and through the local production of exports.

The production of wealth can be controlled by supporting specialists, who manufacture the wealth as attached members of the chiefly retinue, but only if the manufacturing process can be limited to a few producers ([Chapter 6](#)). In this regard, the nature of production is extraordinarily important: Is the production process sufficiently complicated or elaborated that only a few highly skilled craftsmen can do it? Does it require materials with very limited availability? The elaborate flint daggers were beautiful indeed, but production could not have been controlled. The techniques of manufacture were not esoteric; they were based on basic flint knapping principles known to most farmers. Certainly some individuals would have been considerably more skilled than others (Stafford 1998), but many knappers would have been sufficiently skilled to produce daggers of some reasonable quality. Similarly, the best flint material was limited to a few sources that were regionally available, but lower-quality substitutes were available in every farmer's fields. Thus the primary prestige goods of the Late Neolithic would certainly have varied in quality, but to maintain exclusive control over production and to prohibit the availability of "fakes" would have been impossible.

In contrast, during the Early Bronze Age, bronze making was not a skill known broadly in northern Europe. Its secrets were no doubt highly esoteric, almost magical, known only to a few people. The technology involved complicated pyrotechnological skills necessary to obtain and regulate high temperatures, to work the metal, and to use the sophisticated lost-wax casting method (Kristiansen 1987). The numbers of individuals who could have produced the chiefly swords or finest decorative objects would have been few indeed, and they could have been kept under the chief's thumb by guarded sponsorship of production.

Early Bronze Age chiefly households have now been conclusively associated with bronze metalwork. In northern Jutland, an EBA II chieftain's hall (48 m long, 9 m wide) at Tyrrestrup contained a stockpile of 3.2 kg of bronze that included two socketed axes, seven palstaves (a special weapon), an ingot, and a melted lump (Nilsson 1993-1994). Five of the palstaves were miscastings and two were from the same mold. In southern Jutland, another EBA II–III

chieftain's hall (50 m long) contained evidence of bronze casting (Ethelberg 1995). Bronze crafting must have taken place right within these large chiefly residences.

Fine bronze swords and other weapons and items of gold would have been produced by attached specialists, and then these prestige goods could have been distributed within carefully controlled political spheres of exchange. These objects would have been inalienable objects, distributed to build and maintain relationships of political support and fealty (compare the Hawaiian feathered cloaks discussed in [Chapter 7](#)). They would not have been commodities that could have moved freely in interpersonal exchange according to personal whim or desire. Rather the objects and their distribution encapsulated the political hierarchy (heterarchy) of the place and time and doubtless moved in highly controlled exchanges between chieftains and warriors. The swords were so closely associated with individual identities that they were buried with the warriors and chiefs.

Because chiefs and Big Men typically inherit trading partners from their fathers, leaders have also held advantages in long-distance exchanges. The exchange process itself, however, is difficult to control over any time period. The value of the objects encourages others to try to develop alternative pathways. Only in circumstances like the sea-going canoes of the Trobriand chiefs (Burton 1975) or the camels of the Twareg chiefs (Saenz 1991) was a technology of transport controllable by an emerging elite. At present, no evidence exists for the development of such movements of goods in the EBA of northern Europe, although the possibilities must be considered. Although considerable attention has been paid to "trade routes" (Kristiansen 1981), my sense is that goods believably moved through a decentralized network of down-the-line exchanges. At the end of the Bronze Age, however, when wealth became concentrated in the islands of Denmark, control over boats for exchange and raiding may have become more important.

An additional way to control access to materials in exchange is to control the production of export goods demanded in the prestige-goods exchange systems. Intensifying the export production in the Thy economy began in the Late Neolithic, when local warriors vying for status desired the best flint weapons, and all households were potentially involved in the production of hides and the collection of amber. In the Early Bronze Age, to obtain the ingredients for bronze for which no local sources existed, chiefs needed to intensify the local production of export products. But could they control that export production?

Apparently chiefs could control export production, but only selectively. Amber, a critical export product, for example, was difficult to control, and even today amber fishing is a sector of the Danish economy that goes largely

untaxed. Rather than in chiefly settlements, the collection of amber in the EBA was concentrated near the coast, the source of amber. Here elite households would certainly have been involved in amber production. Within Bjerre house 6, a high-status household, a cache of amber (69 pieces) was found below the floor, where it was likely buried in a small bag. Throughout the floor deposit of that house, another 83 pieces of amber were recovered, especially in the western end of the house, where it was presumably sorted. At the same time, however, the chiefly halls at Legård, a settlement away from the sea, had only a single piece of amber. Although no floor deposit was recovered from Legård, the lack of amber in its many pits and postholes was striking. The Bronze Age chiefs of Thy trafficked in amber, but the amber appears not to have been central to their political economy.

In contrast, Early Bronze Age chiefs may have dominated cattle raising and hide production for export into the prestige-goods exchange systems. Cattle are a moveable wealth important in many traditional economies, and during the Bronze Age hides were objects of wealth and symbolic meaning in Denmark and across Europe ([Chapter 13](#); Rasmussen 1999; Roymans 1999). In the Early Bronze Age, the richest regions of Denmark were western Jutland, where the ability to raise cattle may have determined a chief's success. At Bjerre's warrior house site 6, the most common tools were scrapers used to produce hides. At the chiefly hall of Legård, cattle stalls took up the central part of the house. Ethelberg (2000) argues that, within the 50-m-long chieftain's hall where bronze working was documented, two large pits could have served for tanning hides. As grasslands were expanded for pastures in the EBA, the political economy was transformed to concentrate on cattle raising and hide production.

Intensification of and control over the production of cattle may have been made possible by the creation of a system of land ownership vested in individual chiefs and warriors. As I argue in [Chapter 13](#), the construction of burial monuments through southern England formalized a system of land ownership that controlled the production of surplus to finance the Wessex chieftains. The same pattern appears to have been true in Denmark. The EBA landscape of Thy was dominated by earthen barrows built high on hills, ridges, and fjord escarpments. Ownership of these productive lands would have been claimed by descent from the persons interred on the land, whose graves were visible to all. My model envisions a dispersed settlement of farms owned by chiefs, warriors, and free farmers, with some cottagers. As in medieval Iceland, ownership was no doubt vested in individual hands, but ownership rights would have required certain guarantees of ownership based on the ability to exclude others ultimately by force. In simple terms, owners needed the support of warriors to maintain their rights, and these warriors were loosely

coordinated by emergent chieftains. The distribution of wealth tied to international exchange and local specialist production supported the dependence of the warriors on the chieftains. Ownership, guaranteed by the fragile political hierarchy, may also have allowed the emergence of specialization and commodity flows involving everyday objects like sickles (Steinberg 1997). The assertion of ownership by EBA chieftains and warriors would have ended the common pasturelands and resource access that I believe characterized the Neolithic society of Thy.

The Late Bronze Age

At the same time that the islands of eastern Denmark saw the emergence of strong chieftains, the society in Thy became substantially more egalitarian and the amount of imported metal wealth (especially in the finest objects) declined dramatically (Kristiansen 1978). In terms of the same five regions of Denmark, northwestern Jutland slumped in wealth from number two to number five (last) and neighboring southwest Jutland from number one (first) to number four. The chiefly and warrior class lost all distinction in Thy; no longer were there rich chieftains' burials. In terms of the political economy, the primary changes appear to be linked, reversing conditions during the EBA. Cattle declined in importance, and cereal farming may have expanded. The construction of burial monuments, in part to mark ownership claims in pasture lands, declined as the cereal fields became more extensive. The importation and use of bronze for weapons and personal decoration declined, at the same time that the metal's use in everyday tools actually increased. In the broader perspective of Denmark, the most wealthy areas shifted from the west, more favored for animal raising, to the east, more favored for cereals. Was this based on a shift in the nature of finance from wealth to staples, comparable to what took place in England ([Chapter 13](#))?

An explanation of these changes is that the prestige-goods exchange system that was critical to move metal wealth for Thy's chiefly finance system collapsed. This explanation is seductively attractive. The collapse of the chiefdoms in Thy could have resulted from any combination of changes, including:

- Continued importation and recycling of bronze could have increased local availability of the metal, thus inflating its value and making controlled access problematic;
- International supplies of bronze could have declined, making the supply of metal unreliable;

- The technology of metalworking could have become more generally known, making production increasingly difficult to monopolize through attached specialization;
- International production of wool textiles and glass could have undercut the value of Thy's primary exports in hides and amber; and/or
- A change in the technology of transport or the routes of trade could have increased or decreased the relative cost of metal import or simply bypassed Thy (Kristiansen 1981).

All or any combination of these factors could have devastated the chieftains' ability to control access to metal products and exchanges in inalienable objects. These factors cannot be studied directly in Thy, and so I cannot resolve whether any were important in the dramatic political change. The most important point, however, is that the EBA political economy based on long-distance exchange of wealth must have been fragile indeed. In a wealth finance system, local chieftains depended on international supply and demand of imports and exports, and instabilities can cause sudden collapses ([Chapter 8](#); Gilman 1987). The ultimate cause of a collapse must, therefore, be seen as the structure of the finance, based on exchange of a few products for which control of both value and availability were problematic.

Changes to the environment, perhaps exacerbated by overgrazing, appear to have contributed to the EBA-LBA social transformation: "remarkable, short-lived economic growth, resulting in ecological over-exploitation" (Kristiansen 1981: 252). In Denmark and across much of England (Bradley 1978, 1984), the rapid increase in heath plants, which thrive on exhausted soils, was likely induced by overgrazing. During the LBA, the stable sand dunes that fringed the North Sea became destabilized and began to drift inland covering field areas in Bjerre, Lodbjerg, and elsewhere. These drifting sands were mainly dated to the first millennium B.C. and appear to have been caused primarily by environmental change (Bech, personal communication), but the intensive grazing of the dune formations may have further destabilized them. During the medieval period, similar drifting sands seriously damaged agricultural lands and pastures in Thy. During the Bronze Age, agricultural fields and house areas at Bjerre were blanketed by drifting sand, and we suspect a similar process up and down the coast (Liversage and Robinson 1995). Environmental problems may have undercut the productivity of the lands and their ability to support large-scale herding and export production of hides and other secondary products.

Bronze, however, continued to be locally important and exports must have been produced as a medium for exchange. Declines in cattle bone and in grasslands discussed earlier suggest that cattle herding sagged during the LBA.

To compensate for the loss in cattle exports, I believe that the local Thy population geared up the pace of amber collection and that this shift in exports may have effected a loss of chiefly control and the resulting decline in social stratification.

Opposite to the decrease in cattle production, amber gathering for export appears to have increased substantially in areas close to the sea. In the Late Bronze Age at Bjerre, for example, amber was prevalent at the typical LBA house site 7. Here we recovered nearly 1,800 pieces of raw amber weighing 1.8 kg. Amber pieces varied in size from many hundred small pieces (<0.1 mg) to ten large pieces weighing over 10 g. The amber was spread through the cultural layer, but was concentrated outside of the house. Here amber was apparently stored in several large pots set into the ground. Such storage vessels typify many LBA settlements, and the pots and pits in which they were set were common in Bjerre site 7, where several pits originally contained storage vessels with amber. These pits were roughly shaped like the pots and often had sherds from a storage vessel along with scatterings of amber. From one pit that contained most of a reconstructable storage vessel and from the immediately surrounding excavation units, we recovered over a thousand pieces of raw amber weighing 1.2 kg. Nearby, another large, broken pot had a few fragments of amber adhering to its interior surface. At this simple house, multiple storage containers must once have been filled with amber. Subsequently the pots were removed from the ground, usually breaking in the process, and incompletely emptied of amber. The scale at which amber was being amassed at site 7 was impressive, especially considering that it was a house without elite pretensions.

With similar amounts and types of excavation, the total piece count of amber recovered by TAP increased by two orders of magnitude. Although no LN sites have been excavated adjacent to the coast, the maximum amber count for a house was only three. In the EBA, near the coast at Bjerre, site 6 yielded an amber total of 152 pieces; other EBA excavations so far have yielded single finds. And then came the significant increase locally during the LBA. In Bjerre site 7, 1,800 pieces of amber were recovered, and in site 1 a pit with LBA ceramics contained another 84 pieces. In the coastal settlements at Bulbjerg, Thy, 66 pieces of unworked amber were found scattered through an LBA cultural layer. At other LBA settlements like Vilhøj and Legård that were located away from the amber-yielding coasts, amber has not been recovered.

All amber recovered by TAP from Late Bronze Age contexts was raw and no doubt destined for export. "As no production of amber took place at the Bjerre sites, amber collection may have been part of external exchange arrangements and the finds only the leftovers from such activities (cf. Jensen 1965: 48)" (Bech and Mikkelsen 1999: 71). The complete absence from LBA contexts in Thy of manufacturing debris (as found in the Middle and Late Neolithic sites), the

small sizes of much of the amber (perhaps discards?), and the very few finds of finished amber support the conclusion that amber was being gathered for export. Evidently the amber was being amassed at site 7 and elsewhere.

The lack of further processing would have maximized the ease of its translocal trade. Any modification of the amber, beyond sorting by size and quality, would limit its exchange value because particular forms might be inappropriate for local cultural styles and uses. Trade in raw materials, rather than finished objects, permits the material to be transformed at its final destination into whatever objects (beads of different styles, amulets, inlays, etc.) were locally desired. Therefore, evidence for the manufacture of a trade good like amber should not be sought close to its source, but rather close to the areas of consumption where form may be tailored to culturally specific desires.

At the settlement of Bulbjerg, excavators noted the association of amber with mold and crucible fragments from metal production (Müller 1919), and they suggested that the amber was being collected as an export to gain metal. The same may have been true at Bjerre, where a few crucible fragments were recovered from site 7. Throughout Denmark during the Late Bronze Age, archaeologists have recovered considerable evidence of metal fabrication (Levy 1995). In Thy, the presence of metal production but the absence of chieftains suggest that metal manufacture took place without elite involvement. Rather it seems that the bronze was being manufactured locally into everyday tools and personal items, such as bronze sickles, jewelry, tweezers, and razors. As discussed earlier, I believe that the loss of flint sickles at this time when agriculture was being intensified suggests that metal sickles were becoming important. Coastal settlements like Bulbjerg or Bjerre that were able to trade in amber may have started to produce everyday objects of metal for local exchange.

Conclusions

As discussed in [Chapter 8](#), alternative mechanisms of finance have been available to traditional societies. These alternatives set up multiple pathways to complexity, as specific conditions of an economy affect how political systems develop (Earle 1997). Here I have used the Neolithic and Bronze Age economies of Thy to illustrate the operation of prestige-goods exchange and its connections to the underlying subsistence economy.

In the subsistence economy of Thy, a long-term trend of intensification was tied to slow population growth, especially from the Middle to Late Neolithic and from the Early to the Late Bronze Ages. Farming used simple ards, sickles

of flint and then bronze, and fertilizers with manure and other additives. Anomalous to this trend, during the Early Bronze Age, an expansion in cattle raising and the areas used was not correlated with population expansion. The reasons for this economic change were political, linked to exchanges of prestige goods.

In the political economy, prestige-goods exchange continued to be important as a means to accumulate wealth and display status throughout the Neolithic and Bronze Ages. The objects being exchanged, however, showed some significant changes, and these changes had profound social implications. During the Late Neolithic, the primary prestige goods used in Thy were flint daggers, arrowheads, and strike-a-lights and ceramic drinking vessels, all part of the Bell Beaker assemblage; these were items of local manufacture, although they often copied foreign styles. Although status was evidently contested in the Late Neolithic, wealth accumulation was only modest and status differences subtle. Amber, an important local prestige good from the Mesolithic through the Middle Neolithic, became an export commodity, and cattle hides and perhaps other secondary animal products were probably also traded.

During the Early Bronze Age, however, the prestige-goods exchange was transformed by emerging elites. The media (although not the meaning) of the prestige objects shifted from locally available flints and ceramics to fine swords, daggers, and jewelry made by skilled attached craftsmen from imported metal, which presumably would have been provided by chiefs ([Chapter 14](#)). For the first time, by ownership of pastures, chiefs effectively controlled the production of the main export (cattle products) and thus dominated the prestige-goods economy.

Then during the Late Bronze Age, control over the export economy faltered as exports shifted away from cattle products (as pasturage declined in productivity) and toward amber. Amber procurement and export, in contrast to cattle, would have been extraordinarily difficult to control centrally, and thus continuing importation of bronze became more generally accessible to the population. Furthermore, as the metal became more generally available, its technology was simplified and practiced more broadly to make a wide range of everyday items like agricultural sickles, working axes, and fish hooks, as well as items of personal display and grooming.

The use of prestige goods is common in human societies ([Chapter 2](#)), but the effective use of prestige-goods exchange to finance emerging political institutions is quite rare, requiring the unusual ability to control aspects of export, transport, and manufacture. Such control is always problematic, but the fairly open political economy that resulted is certainly not undesirable except for those attempting to centralize power. The economy of the Late Bronze Age suggests an equality and success indicated by stable farms, improved pottery,

new metal tools, and a growing population.

Other examples where emerging elites have relied on prestige-goods exchange include Africa (McIntosh 1999), South America (Redmond 1998), and western Polynesia (Friedman 1981). When chiefs depend on network strategies more than on corporate strategies, politics are typically less centralized (with potentially competing hierarchies) and more dynamic over the long term (with rapid expansions and sudden collapses). Such intermediate-level societies have been described as heterarchical (Ehrenreich et al. 1995) or as chieftaincies (Redmond 1998). The Danish case appears to be a good view of the dynamics of chieftaincy and heterarchy (Levy 1995). It also illustrates the following three important points about such chiefdoms that utilize network strategies for political maneuvering.

Prestige-goods exchange as a basis for chiefdoms is typically grounded in the subsistence economy. Except late in history when high-capacity cargo ships and large caravans became technologically practical, control over exchange was difficult, small scale, and risky. To control wealth finance centrally, one had to control local export production. This power rarely could be based on control over raw material extraction alone. Amber, for example, was collected by individuals working alone, and bronze ore mining was family based (Shennan 1999). Rather control was based on ownership of the land producing the export materials and on the labor to realize its potential. In Denmark, chiefs had to assert ownership of the pastures, ensnare a warrior elite to ensure that ownership, and encourage people to give up animals in return for protection. The production of wealth required control over surplus subsistence production to feed supporters. As discussed in the Peruvian case, wealth finance as an effective political strategy typically extends a staple finance system based on ownership of subsistence resources ([Chapter 13](#)). Prior to the development of world mercantilism, the power of rulers was limited by the productivity of the part of the subsistence economy that he or she could dominate.

Network strategies are fundamentally unstable. Distance precludes control over external factors such as supply and demand of prestige goods. The availability of important wealth and the specific need for exports are always unpredictable, such that a local polity is dependent on broad international economic relationships. Significant value of prestige goods encourages attempts to fake and smuggle them, making guaranteed value difficult. Trade routes could change for other reasons. The chieftaincies of the Danish Bronze Age were short-lived and small scale, doubtless because of difficulties in maintaining and controlling surplus production from an intensified agricultural economy. Following faltering wealth finance systems in both Bronze Age England and Denmark, societies appear to have retrenched

dramatically and established more intensive agricultural economies that were effective for the surplus production of staples ([Chapter 13](#)).

Wealth finance may transform and destabilize the subsistence economy. Whereas staple finance is handled typically by intensification of existing systems, substantial wealth finance requires the reorganization of local production to produce exports. The importance of prestige-goods exchange can be measured by the extent of transformation in the local economies. Thus despite profound political changes with Inka imperial conquest, the local Wanka economy was little changed ([Chapter 10](#)). In contrast, during the subtle rise of chiefdoms in the Early Bronze Age of Denmark, we document dramatic changes in the herding sector of the economy (to emphasize cattle), in the production of sickles (with high-volume production of flint sickles as part of a local market development), and in the collection of amber. The growth-oriented cycle in production was potentially disastrous. The high value of the exports, such as hides, encouraged expansion of production that may have been beyond ecological tolerance. The rapid expansion and collapse of Bronze Age economies in areas of cattle raising illustrate the destabilizing effects of maximizing production (Bradley 1978).

Property Rights and the Evolution of Chiefdoms

The emergence of property rights underlies many of the developments in human history and society (Earle 2000). Here I concentrate on the fundamental relationships between the development of chiefs and specific property rights in prehistory. The evolution of chiefdoms hinges to a large measure on the ability to control or direct the flow of energy and other basic resources through a society as a means to finance new institutions ([Chapters 4 and 8](#); Johnson and Earle 2000; Price 1978). Chiefdoms with their distinctive nonproducing elite sector depend on the ability to mobilize and direct a "surplus" extracted from the commoner producers. To be sure, control is never a simple procedure. As we discussed at length in the School of American Research Advanced Seminar on chiefdoms, chiefs can use diverse economic, social, political, and religious strategies (Earle 1989). Especially for corporate strategies, control rests first and foremost on dominating labor, the limiting factor in production in nonindustrial societies (Price 1984). Although not considered in this chapter, property rights in commodities and inalienable objects form a partial alternative pathway for emerging chiefdoms ([Chapter 12](#); Earle 2000).

Control over labor itself is never an easy matter because a tension always exists between social levels over rights to allocate labor (Johnson and Earle 2000). Families do not freely give up labor without either an expectation of direct return or the threat of losses. Similarly the leader of a local group is reluctant to deliver up labor to a higher authority inasmuch as this undercuts his local support base. Labor mobilization depends usually on an explicit reciprocity, a return for service. What the emerging elite has to offer in return to its supporters may be somewhat variable, but the recurrent pattern would appear to be access to land and its productive resources.

The importance of property rights as crucial to the process of social evolution has been recognized by many scholars. Among nineteenth-century theoreticians, private property rights were especially emphasized by Marx and Engels (1965 [1846]; Engels 1972 [1884]), who delineated the key role of private property in developing systems of economic domination and political control. The evolutionary (Marxian) emphasis on private property came under vehement attack by the Boasians (Lowie 1947; Herskovits 1952), who refused to recognize an evolutionary importance of ownership. Perhaps as a result, in

Service's (1962) influential neo-evolutionary synthesis, property rights were not regarded as particularly important. Among anthropologists, Fried (1967) revived an interest in property rights. He focused on the shift from communal to private rights as underlying the differential access to strategic resources, the key economic ingredient for stratification and the evolution of the state. Sahlins (1972: 92-94) reiterated Fried's position by equating the shift from kinship to property as a basis of control with the beginnings of bourgeois states. Among economists, Douglass North emphasized the role of property in state systems: "States attempt to act like a discriminating monopolist, separating each group of constituents and devising property rights so as to maximize state revenues" (1981: 23).

On the basis of the evolutionary framework laid out in Johnson and Earle (2000), it is possible to discuss some changing roles of property rights in the evolution of social complexity. Although certainly not a simple unilinear development, this sketch may help focus attention on how critically important ownership can be in social and political relationships. First, at the family level of organization, land rights are ambiguous and flexible. As described for the !Kung of southern Africa (Lee 1979), for example, lands are not divided into discrete, bounded territories. Rather lands are associated with particular camps on the basis of established patterns of use; these home ranges are not defended territories. Property rights, however, do exist, especially tied to limited and concentrated resources such as the !Kung water holes or Shoshone pine nut groves. Such rights are often associated with particular people or families with long use rights, but others may ask permission to use the specific resource. Although permission is rarely refused, it obligates the visitor to extend reciprocal rights on his own lands. The flexibility and openness of property rights among hunter-gatherers has been explained as a necessary adaptation to local variability in resource yields from place to place and from year to year (Yellen and Harpending 1972). Cashdan (1983), however, emphasizes that territoriality exists among such groups, maintained by social boundaries.

At the local group level, property rights are radically transformed with the creation of lineages or clans. These corporate groups are associated with specific, demarcated land sections that are defended along their perimeter. Ownership is publicly established during ceremonies, such as when the Tsembaga "plant the rumbim," and the boundaries of clan territories are staked out (Rappaport 1967); participants in such ceremonies then share rights to the land. Collier (1975) has argued that such corporate groups evolve as a response to increasing population density and resulting conflict between groups. Individual families receive land through their clan/lineage; traditional rights to clan lands are sanctioned by history—their ancestors inhabited the lands and their ghosts are thought to persist there. Families clear and improve sections

for garden and house sites, but their rights depend on continuing use. Abandoned lands revert to the clan. Collier (1975) points out that individual titles emerge in these societies at high population densities when land is continually used and internal conflict ruptures the corporate groups. In highland New Guinea, for example, individual land ownership is associated with high population densities and intensive agriculture (Podolefsky 1987).

At the level of chiefdoms, considerable discussion was raised in the Advanced Seminar concerning the role of property rights and resulting political control (Earle 1989). Many seemed to follow the position originally articulated by Fried that ranked societies (or simple chiefdoms) relied on kinship as the primary mechanism of control. I explicitly argued that land tenure, even at the emergence of social differentiation, could be quite important. In simple chiefdoms, chiefs are local leaders, highly respected members of the clan. Clan lands are spoken of as owned by the chief, who can manipulate his position for significant political advantage. The Trobriand Islanders illustrate how this works. The local sublineage (*dala*) owns agricultural land, but the group's leader, by controlling the annual allocation of subsistence plots, effectively controls access to it (Malinowski 1935). A household can obtain land only from the leader, and he can allocate use rights to *non-dala* members who support him politically. The leader also exercises control through his ownership of the magic that accompanies all major steps in farming. He is thus central to the production process and uses this position to further his political ambitions.

The preceding evolutionary pattern for land tenure is of course simplified and should not be taken as an invariant unilinear scheme. In fact, the basis of control can be highly variable; however, the evolution of property rights by which chiefs control primary production can be seen as basic to the evolution of many complex stratified societies. To investigate the nature of land tenure in the evolution of chiefdoms, I review the archaeological literature for two long-term trajectories—the Hawaiian Islands and the Wessex region of southern England. These are historically independent and in many ways contrasting cases of prestate social dynamics, but, as I shall argue, the significance of economic control through varying systems of land tenure is a constant theme. How property can be studied archaeologically is discussed more fully in an *Annual Review of Anthropology* chapter on this subject (Earle 2000).

Chiefdoms of the Hawaiian Islands

As discussed in [Chapters 4](#) through [7](#), the evolution of complex Hawaiian

chiefdoms provides a vivid example of the evolution of intermediate-level societies. For comparative purposes, I extend those discussions explicitly to consider the nature of property. At contact with the West, separate highly stratified chiefdoms each held one of the large islands of Kaua'i, O'ahu, Maui, and Hawai'i. An original founding population, probably a few hundred, had settled the islands by about A.D. 400 and eventually reached at least 300,000. I believe that population approximated a single 1,400-year cycle of logistic growth as a colonizing population expanded and intensified resource use and eventually became constrained by available resources. The multiple population cycles of growth and decline or stability described for the European Wessex (England) and Thy (Denmark) cases contrast with the Hawaiian case. The main difference appears to have been the ability of the Islands to sustained long-term intensification based especially on irrigation agriculture.

The archaeological evidence of the chiefdoms in Wessex (Renfrew 1973), Mississippian culture (Peebles and Kus 1977; Steponaitis 1991), Mesoamerica (Earle 1976; Feinman 1991; Drennan 1991), and the Marquesas (Kirch 1991b) included monument constructions. The mobilization and coordination of construction labor require some central hierarchy. In the Hawaiian chiefdoms, monuments included *heiau* shrines with elaborate stone platforms and enclosing walls (Kolb 1991, 1994). The larger *heiau* frequently have multiple paved terraces enclosed by walls. They could be built on hilltops or slopes, where a prominent location would highlight the shrine's massiveness at the same time that the actual expenditure of labor in construction could be minimized. Pi'ilanihale *heiau*, at 12,100 m², was the largest *heiau* on Maui. It had an estimated 128,000 labor days (5 hours = 1 labor day) in nine construction phases (Kolb 1991). This was impressive, equivalent to the cursus monuments, but still smaller than the largest monuments of the Wessex chiefdoms. The more typical *heiau* might be about 1,000 m² and required perhaps 2,000 labor days in construction over three or four construction phases. For the island of Maui, one of the four original Hawaiian paramountcies, Kolb (1991, 1994) has estimated the long-term pattern of labor investment in monument construction. Early in the prehistory of Maui during the Formative Period (A.D. 1200-1400), total ceremonial construction has been estimated at 4,200 labor days or 1d (standardized to 420 ld/g or labor days per 20-year generation). Construction then rapidly increased to 117,900 ld (23,580 ld/g) for the Consolidation Period (A.D. 1400-1500) when the major wars of political consolidation raged, before declining to 82,400 ld (10,990 ld/g) for the Unification Periods (A.D. 1500-1650) and 67,400 ld (7,930 ld/g) for the Annexation phase (A.D. 1650-1820). The variation across time is significant and represents what I interpret as strategic restructuring of the political landscape. The efforts in construction were made relatively early in the sequence of

institution building, only to decline after the chiefdoms were formed. Following the completion of the monuments, labor may have shifted more toward ceremonial performance and sacrifice at the shrines (Kolb 1994).

The use of the large *heiau* is well documented in the historic record. The major chiefly shrines were dedicated either to Ku the god of war or to Lono the god of fertility (Valeri 1985). Ceremonies of war, when the paramount chief prepared for conquest, were conducted at Ku's shrines, where human sacrifice was performed. Other large shrines dedicated to Lono were also used during the annual Makahiki ceremonies, festivals when the paramount chief acted as the god Lono, who was thought responsible for the fertility of the lands (Peebles and Kus 1977). The stick figure of the god was paraded around the island where it would stop at the boundary of each local community where a special shrine had been constructed to receive the annual contributions (tribute really) used to support the chiefly institutions ([Chapter 4](#)).

The large Hawaiian temples were spaced fairly regularly around the islands, typically in the more important local communities. On Kaua'i, for example, the residence of the ruling paramount chiefs had five large *heiau*, while only two other communities had more than one large *heiau*, and those had only two each (Bennett 1931). In the Makaha Valley of Oahu (Ladd 1973; R. Green 1980: 63-69), the Kane'aki *heiau* was constructed in six distinct stages, beginning in the sixteenth century; the temple was expanded at each rebuilding, was enclosed by wall, and finally, in the last two stages, probably took on the status of a large *heiau* involved in major ceremonies. Smaller *heiau*, several excavated by Ladd, existed in the valley. Dating apparently to the late historic period (seventeenth and eighteenth centuries), these contemporaneous shrines show a regular spacing that R. Green interprets as documenting a formalized division of the valley's resources among community groups. For Halawa Valley, Kirch and Kelly (1975) describe many small shrines associated with local ceremonies and territorial divisions within the valley. In the late prehistoric period, a major *heiau* was also constructed in Halawa.

Monumental construction through the Hawaiian Islands appears to have been an important part of the building of the political-religious structures of the chiefdoms, their articulation with the local communities, and the internal organization of those communities. The monuments functioned to institute the structure of the island chiefdoms. But it is equally clear that the scale of construction was fairly modest.

My argument, presented more fully elsewhere (Earle 1997, 2001), is that more important than ceremonial construction was the building of an intensive agricultural landscape with irrigated fields and dryland terraces. These permanent field systems constructed the hierarchical pattern of land ownership that formed the basis for the staple finance. (Compare the shift in labor

construction in the Iron Age of England.) It seems reasonable that, prior to the building of the permanent field systems, territories in the Hawaiian Islands were held as lineage lands managed by chiefs as group leaders. Following the reorganization, the most productive lands became improved and carefully divided up. Considerable labor was invested in these changes to the landscape, as individual fields and farms were demarcated by permanent terraced plots and subdividing walls. Where topography did not provide sharp definitions, stone walls were used to define community and subcommunity units.

At this point, the basis for the historic staple finance system would have been in place; community land, given over to the chiefs, served as their income estates. Use rights to individuals were given in return for household labor on chiefly lands and other projects. In the early historic periods, the boundaries and subdivisions of land units were well known and recited in land claims. Named rocks, ridges, streams, walls, and shrines were all used to delimit the perimeters. In one interesting law case, chiefly ownership of a land segment on Kaua'i was identified explicitly according to whose manager had rights to put its residents to work (Earle 1978: 189).

Certainly the primary basis for finance created in the reorganization of the subsistence economy was also associated with religious monuments. These monuments appear to have marked territorial divisions and to have served to legitimize the existing pattern of land ownership, with the chiefs as earthly gods responsible for the "natural" processes of production. The message seems clear, however, that when land ownership is unambiguously defined, as it was in the field systems and fish ponds, the need to invest labor in complex ceremonial architecture is not great. This suggests that the amount of labor invested in monuments is *not* a straightforward measure of central control but rather reflects one pattern of control, the importance of which we can now investigate with the British evidence.

Chieftdoms of Wessex

In a seminal article, Colin Renfrew (1973) argued that chieftdoms evolved in the Wessex region of southern England during the Neolithic and Bronze Ages. On the basis of the distribution of labor invested in burial and ceremonial monuments, he inferred sizable polities centrally organized and controlled by chiefs. The territorial nature of the Bronze Age barrow cemeteries had earlier been described by Fleming (1971, 1973), and Cunliffe (1978) later argued for a continuing territoriality and chiefly redistribution centered on the Iron Age hill forts of southern Britain.

Wessex encompasses approximately 9,000 km². The region has gently rolling relief, low in elevation. Soils vary from the light soils covering the chalks to the heavier clays and alluvial soils along the stream courses. Especially important for prehistoric settlement have been the extensive chalk lands of the Salisbury Plain, the Marlborough Downs, Cranborne Chase, and the Dorset Ridgeway, which may have been covered originally with loess (Bradley 1991). Streams that at times were the focus of settlements include the Upper Kennet, Wylde, Avon, Test, Stour, and Frome. The catchment areas of these streams create a natural zone that is distinct from the gravels of the upper River Thames to the north, the low marshlands of Somerset to the west, and the chalk lands of Sussex to the east.

In the summary to follow, I rely heavily on the synthetic work of Richard Bradley (1984, 1991; Bradley and Hodder 1979; Barrett and Bradley 1980; Bradley and Gardiner 1984). Building on his work, my goal is to focus on how growth and decline in population, a shifting subsistence, and social organization are interrelated. Especially important is to show how changes in the sociopolitical organization of chiefdoms were linked to changing mechanisms of land tenure and finance. Using a chronological scheme adapted from Burgess (1980), three periods are identified:

1. The Age of Early Farmers (4100-3000 B.C.), equated with the Early Neolithic;
2. The Age of Stonehenge (3000-1400 B.C.), subdivided into the Late Neolithic (until 2200 B.C.) and the Early Bronze Age (afterward);
3. The Age of Hill Forts (1400 B.C.-A.D. 43), subdivided into the Later Bronze Age (until 700 B.C.) and the Iron Age (until the Roman Conquest).

Population and Subsistence

Population is a critical variable for models of the evolution of complex society. In ecological models, population represents the basic needs of the human group; in political models, population represents the available labor that must be controlled and directed. Using the English data, population density and distribution have been difficult to measure. In terms of comparability between time periods the best measure that could be devised is the number of sites with radiometric dates (with one standard deviation as calibrated by Stuiver and Reimer 1986) in each 100-year time block (compare Rick 1987). Although this measure is certainly biased toward monuments that are particularly visible and thus likely to be excavated, both later and earlier components are frequently encountered during excavation such that each excavation represents

a sampled locus of potential human activities. In addition, recent public archaeology along highway corridors provides a relatively unbiased sample of archaeological sites with radiometric dates.

For the Age of Early Farmers in Wessex, the earliest dates commence about 4100 B.C. (Fig. 13.1). From 4100 to 3300 B.C. the number of sites with radiocarbon dates increases consistently from three to fifteen as population grew to occupy the more desirable locations in Wessex. After 3300 B.C. population may have declined with a low of eight sites with radiocarbon determinations spanning the time frames from 3000 to 2800 B.C., early in the Age of Stonehenge. From 2800 to 1700 B.C. the number of sites with radiocarbon dates increases consistently to a second peak of fourteen sites. This is during the Early Bronze Age when burial mounds were constructed ubiquitously through Wessex. Population appears to decline again to a low of only four sites in the tenth century B.C.. Then sites increase in number somewhat, but this probably masks a more significant growth suggested by the increasing size of settlement sites through the Age of Hill Forts. A quick inspection of Fig. 13.1 suggests three cycles, each of roughly a thousand years, with population peaks in the Early Neolithic Period, in the Early Bronze Age, and in the Iron Age.

To evaluate the population cycles with independent evidence, I tried to inventory the frequency and distribution of temporally diagnostic artifacts. For the Ages of the Early Farmers and of Stonehenge, the arrowheads are reasonably common and show broad distribution throughout Wessex and England (H. S. Green 1980). The projectile point assemblages from southern and central England seem roughly to support the population trends suggested by the radiocarbon dates for the early parts of the sequence (Bradley 1986). The leaf-shaped arrow points, diagnostic of the Age of Early Farmers, represent a consistent 10 to 25 percent of point assemblages; Wessex with its 23 percent appears to have been a region of relatively high settlement density. The frequency of transverse arrow points then, indicative of the Late Neolithic, dominates the Wessex assemblage with 49 percent; for southern England, this style of point is strongly concentrated in the upper chalk lands of the Wessex region and to a lesser degree Sussex. Subsequently—and unexpectedly, based on the radiocarbon date frequencies—the percentage of barbed-and-tanged points, indicative of the Early Bronze Age, drops off substantially in Wessex. Bradley (1987) suggests that this may represent an early shift in settlement focus in south-central England to the non-chalk, lowland regions of the Thames River Valley, Corallian and Vale, and the Bournemouth area, where barbed-and-tanged points comprise 43 to 70 percent of the arrowhead assemblage. Alternatively, the drop in abundance in Wessex may reflect less armed conflict and a regional peace imposed by the increasing scale of political integration, or it may reflect a replacement of metal weapons for the earlier

flint.

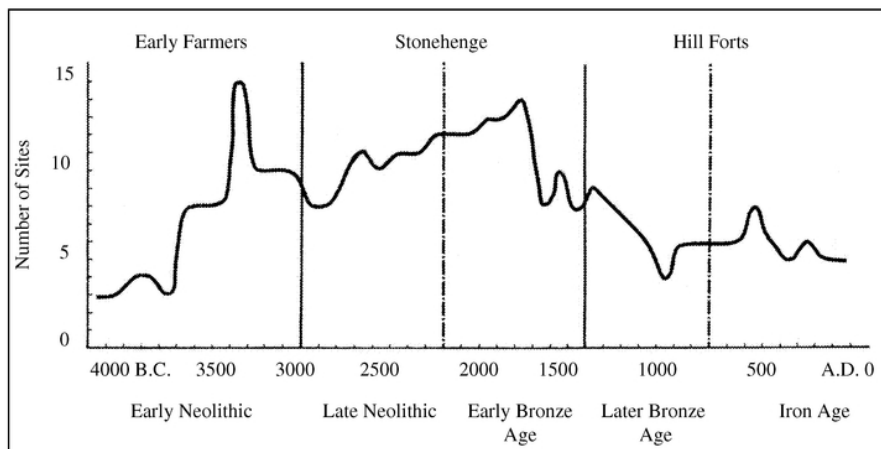


FIGURE 13.1 Number of sites with calibrated radiometric determinations for each 100-year time frame. Shown are three cycles of population growth and decline over about 4,000 years.

With regard to the Age of Stonehenge, an intriguing data set is the cultural material *under* the Early Bronze Age burial mounds (Bradley 1978). Of thirty-one well-documented barrows excavated in the Wiltshire and Dorset chalk lands, twenty (65 percent) have Beaker (transitional Early Bronze Age) occupation, eight (26 percent) have Late Neolithic occupation, and six (19 percent) have Early Neolithic occupation. In other words, by the Bronze Age most locales with barrows had already been occupied. In contrast, in the marginal heath lands of Hampshire and Dorset, all but one of the twenty-three Early Bronze Age barrows were constructed on land surfaces without earlier occupation. This suggests to Bradley (1991) that population expanded into the marginal lands at a time corresponding to the second peak in radiocarbon determinations. The fragile conditions of these marginal zones may well have resulted in their rapid depletion and the decline in numbers of sites with the radiocarbon date for the Later Bronze Age. Could the expansion into new and more marginal areas have had less to do with population growth than with expanding cattle production for an export economy, as I argue for Denmark in the Early Bronze Age ([Chapter 12](#))?

To summarize, the pattern of population change suggests a marked cyclical growth and decline following some form of economic collapse. Changes in the subsistence economy then appear to correlate with these population cycles in order to provide adequate food and a basis for developing systems of finance.

Evidence for the changing subsistence in the Wessex region is not unambiguous, but has been well reviewed by Evans (1975) and Bradley (1978, 1984, 1991). At the beginning of the Neolithic, England was apparently

forested. Although the expanding population's dependency on cereal farming is presently questioned, a progressive clearing of the forests and the local creation of grasslands is evident. The importance of domesticated animals (cattle, sheep, and pigs) is documented in the faunal remains, and the site catchment areas associated with the causewayed enclosures from the Age of Early Farmers would appear to favor animal husbandry (Barker and Webley 1978; Smith 1984).

During the Age of Stonehenge, forests continued to be cleared (or were recleared after a regeneration associated with a population decline), and a fairly open environment with extensive grasslands became dominant in much of southern England through the time period of interest. The major henges were located in agriculturally productive valleys in the chalk lands. Based on the location of much of the ceremonial architecture in areas of open environments, stock raising was probably an important part of the economy at this time (Fleming 1971). Because of the high energetic costs of pastoralism to support a population of sufficient density to have constructed the major monuments of the Age of Stonehenge, however, it seems unlikely that husbandry would have dominated the subsistence economy

Rather the animals probably served as movable wealth that could have been dominated by the elites as part of a developing political economy as described for Denmark ([Chapter 12](#)). Certainly husbandry would have produced special meat products that would have been particularly important in ceremonial feasts associated with the monuments that will be described momentarily. It also could have produced secondary products, like hides, as an export for the increasing importation of metal.

As the Age of Hill Forts commenced, the economy was dramatically transformed. Much of the population, now living more off the chalks, apparently came to rely on intensive farming. Elaborate agricultural field systems were constructed around new settlements, and major settlements contained extensive grain storage buildings. Evidently, for the first time, the subsistence economy depended heavily on cereal crops. This shift in the nature of the subsistence economy was probably mirrored in changing patterns of finance as the central storage and subsequent distribution of the grain staples became important.

Social Organization: Settlement Pattern and Monuments

The best evidence for the social organization of chiefdoms is the settlement hierarchy and its associated monumental construction (Renfrew 1973; [Chapters 3 and 12](#)). Settlement hierarchy helps identify the scale of integration and the

number of levels in the political system; the labor invested in monumental construction helps determine the extent of central control over people.

Settlements of the Age of Early Farmers were relatively ephemeral, hamletsized sites, identified by scattered pits and refuse. In addition were eight (possibly ten) "causewayed" enclosures, the most famous of which is Windmill Hill (Smith 1965). These enclosures have one to three encircling earthen banks, at least in some instances reverted, that set off an area of 1.5-7.7 ha. The fill for the banks was obtained from a series of pits excavated around the exterior of the banks. Although internal features are rarely preserved, artifacts and refuse indicate that these sites were often settlements and served for ceremonial feasting probably involving interpolity ceremonies (Bradley 1991). The location of the enclosures on high prominences, often where later hill forts were positioned, and the evidence for burning and concentrated arrowhead finds indicate the probable importance of interpolity conflict at this time. Most importantly the two-tiered settlement system suggests a political arrangement into simple chiefdoms.

Three types of monuments punctuated the landscape of southern England during the Age of Early Farmers. Most important were the long barrows, which were long, wedge-shaped mounds flanked by ditches and with forecourts and façades that lead into chambers used for communal burials. More than 175 long barrows were constructed in Wessex. Out of 376 25-km² grid squares in Wessex as (used by the site files of the Royal Commission on Historic Monuments [England]), long barrows appear in forty-seven (22 percent) of the grid blocks. Sixteen grid units have four or more long barrows (maximum eleven)(Fig. 13.2). The labor invested in these barrows was often substantial, with the large West Kennet long barrow representing perhaps 3,140 labor days (Id) of work (Startin 1982).

The eight to ten causewayed camps were, in addition to settlements, large monuments of this period. All were not equal in size: Hambledon Hill (Mercer 1980) with its extensive outworks stands out as unusually large and complex; others are quite modest. Startin (1982) has estimated 12,550 ld for Windmill Hill, one of the larger enclosures. It is argued that these monuments were constructed by independent teams, each working in one pit around the bank. These teams would have been small, perhaps representing separate kin groups brought together for the undertaking.

When comparing the two types of early monument, the enclosures dominate in size; however, in overall investment, the abundant long barrows were primary. The importance of these monuments was evidently part of an elaborately constructed environment of southern England that emphasized the importance of ancestors (Fleming 1973; Bradley 1984). This point is further strengthened by the fact that at least some of the activities taking place within

the enclosures involved burial ritual.

Toward the end of the Age of Early Farmers, the third form of monument documents a major shift in scale of labor investment. Three remarkable cursus monuments were constructed near the heaviest concentrations of long barrows on the Wessex chalk lands. Most famous is the Dorset Cursus, the available evidence from which has been summarized by Bradley (1986). The Cursus was a massive rectangular enclosure, 10,000 m long but never more than 100 m wide, demarcated by parallel banks (perhaps revetted in wood to a height of 2 m) and external ditches. Estimates of labor in this monument are conservatively 100,000 ld. The cursuses were carefully aligned with neighboring long barrows, suggesting to Bradley that the cursuses were primarily involved in burial ritual. At least the Dorset Cursus suggests a solar alignment that was to become critically important later for Stonehenge. The overall impression is that the effort invested in the cursus monuments represented a considerable focusing of control over labor at a time when population was quite low, perhaps even declining.

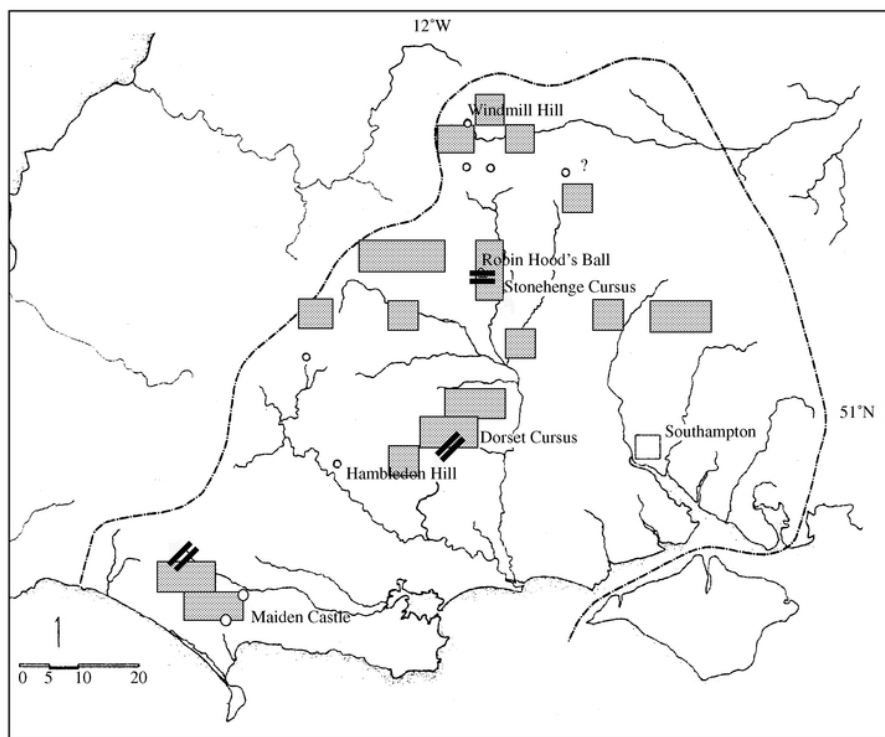


FIGURE 13.2 Locations of the Early Neolithic monuments of Wessex. Circles are the enclosures, and the parallel lines are cursus monuments. The shaded blocks represent RCHM 25-km² survey blocks that contain four or more long barrows. The modern city of Southampton is located for easy reference.

The spatial pattern of the monuments gives a reasonable understanding of

the probable political landscape of Wessex at this time. The numerous long barrows are distributed discontinuously with four major concentrations (twenty-two to sixty-one barrows in each) corresponding to the areas with the three cursus monuments and with Windmill Hill. Additionally there are six smaller concentrations, three to six in a local area, further to the east. The relationship of the causewayed enclosures to these concentrations of long barrows is problematic. In some cases, the enclosures are close to the concentrations as around Windmill Hill, Robin Hood's Ball, and Maiden Castle; others, such as Hambledon Hill, Whitesheet, Rybury, and Knap Hill, appear marginal. The pattern of causewayed enclosures indicates a fairly regular spacing, with a few clusters as in the northern and southern groups. These patterned distributions of the monuments suggest four relatively enduring polities, probably indicative of chiefdoms, and a number of smaller polities with less centralized control around the peripheries of Wessex.

The labor investment in the early Wessex monuments substantiates a degree of central control appropriate for simple chiefdoms. Although similar monuments exist elsewhere in England, the scale of Hambledon Hill or the Dorset Cursus is without equal. Startin (1976, 1982: Table 42; Startin and Bradley 1981) has estimated from 2,200 to 12,500 ld (midpoint, 7,400 ld) for the construction of causewayed enclosures and 600 to 3,200 ld (midpoint, 1,800 ld) for the long barrows. With the labor estimate for the cursus monuments, these figures can be extrapolated to 680,000 ld for fifty-five generations (twenty years each) or 12,400 ld/g. Although the tempo of labor investment is impossible to judge with present data, variation in labor investment probably existed from generation to generation as individual monuments often appear to have been built relatively quickly and then soon abandoned only to be reused later. If we had the carefully controlled estimates of labor investment produced by Kolb (1992, 1994) for the Hawaiian chiefdoms, my guess is that the peaks in construction would probably be associated with the instituting of particular chiefly polities (Earle 2001). The pattern of labor investment in monumental construction appears to be quite similar between the two cases despite the obvious differences in inferred complexity!

The existence of a settlement hierarchy and its association with monumental construction document that, early in the English Neolithic Period, the organization of political life in Wessex was already organized as competing chiefdoms. Each was composed of multiple local corporate groups that worked together to construct larger monuments.

In the Age of Stonehenge, settlements continued to be ephemeral and most probably represented small hamlets or single farms as described for Denmark (Chapter 12). At least the possibility exists that settlement mobility, as would be appropriate for husbandry, may have been high. Pits and refuse scatters,

which are the main traces, concentrate close to the monuments that consisted especially of henges and barrow cemeteries. At present, little evidence for warfare exists for this period. Although no settlements were fortified, this may simply indicate a broad regional peace maintained within the chiefdom. For the Late Neolithic especially, the high frequency of arrowheads, sometimes concentrated as in the Windmill Hill area, may document regional conflict.

The archaeology for the Age of Stonehenge is dominated by a panoply of different monuments (Fig. 13.3). Most impressive were the henge monuments. Henges are banked enclosures, similar in appearance to the earlier causewayed enclosures, but with continuous ditches typically inside the bank. The enclosures vary considerably in size from less than 0.1 ha to as large as 12.5 ha for Avebury. Interior constructions included large post buildings, stone circles as at Stonehenge and Avebury, the pit rings of Maumbury Rings and Stonehenge, and the massive timber wall at Mt. Pleasant. Stonehenge and Avebury both had large ritual avenues connecting the main monument to other sites. Near to Avebury was the massive, artificial Silbury Hill, constructed during the same time. The major henges (Mt. Pleasant, Knowlton Circles, Durrington Walls, Marden, and Avebury) were all located centrally to their probable polities. Many smaller henges and stone circles dotted the landscape and probably served as focal points for more local ceremonies. Evidently these henges varied considerably in importance and represented a hierarchy of ceremonial construction that suggests a strong centrality in political organization (Renfrew 1973). The largest monuments had impressive total labor investments: 400,000 ld for Stonehenge II and III and 800,000 ld for Silbury Hill (three to six times the labor required to construct the largest Hawaiian *heiau*).

Somewhat later, while construction ceased at most of the major henges, 8,000 or more round barrow mounds were constructed across the landscape. These mounds, although in most cases considerably smaller than the earlier long barrows, were characteristically designed for single interments, rather than the communal burials of the earlier monuments. The round barrows were typically built in cemetery clusters on prominent positions along ridges or on hilltops. The individual barrows were often arranged in discrete lines or clusters that suggest social or political relationships as would be expected for ruling lineages. Individual burials were associated with special grave goods that varied importantly in richness; the most impressive were the famous Wessex graves that contained wealth objects of gold and bronze that distinguished important leaders. Generally the extensive labor invested in the construction of the henges for chiefly ceremonies became redirected into the construction of the barrow cemeteries that memorialized individuals and their genealogies.

The redirection of labor for monument construction of personal burial monuments vs. early ceremonial places is dramatic and, I argue, represents a changed message materialized in the monuments. The shift was from the corporate strategy that emphasized the relationship of the chieftom to its productive lands toward a networking strategy that emphasized the success of individual chiefs competing for power in a broad prestige-goods exchange. As mentioned in [Chapters 1 and 3](#), this shift has been described earlier by Renfrew (1974) as the difference between group-oriented and individualizing chieftoms and by D'Altroy and Earle ([Chapter 8](#)) as the difference between staple finance and wealth finance.

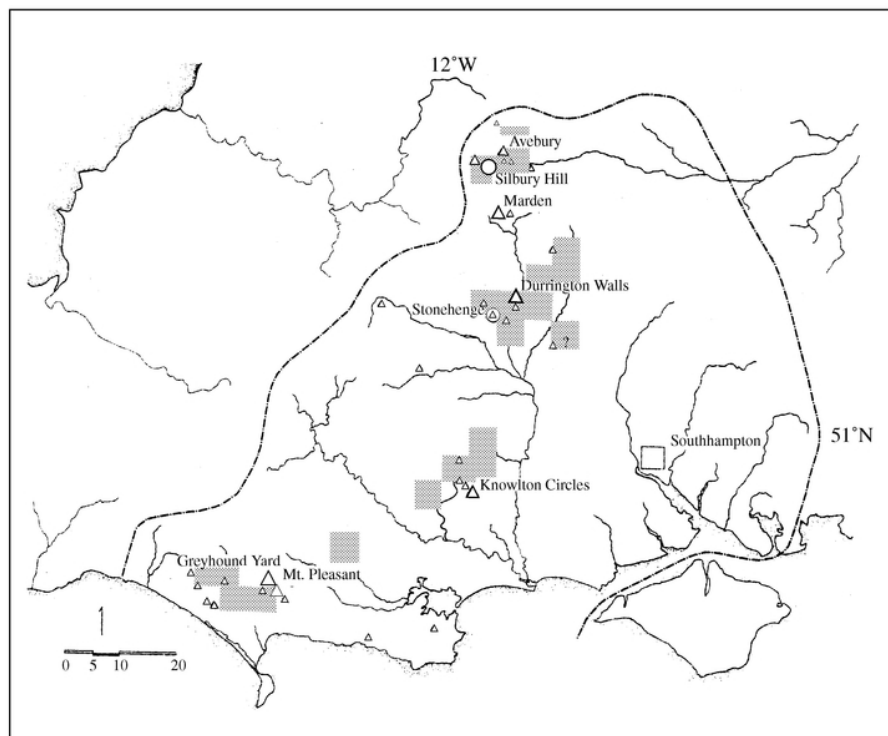


FIGURE 13.3 Locations of the Late Neolithic and Early Bronze Age monuments of Wessex. The triangles indicate henges, large for primary monuments that are named. Circles indicate special monuments that are also named. The shaded blocks represent RCHM 25-km² survey blocks that contain fifty or more barrows.

The political organization of the landscape has been well discussed in the seminal papers by Fleming (1971) and Renfrew (1973). The distribution of the barrows is indeed very broad, occurring in 77 percent of the Wessex grid squares. As mentioned earlier, settlement spread apparently for the first time into the marginal land that became degraded to heath. Despite this broad distribution, distinct clustering of barrows existed. Using a minimum density

of fifty recorded barrows for a 25-km² block, the dominant clusters were the Stonehenge region west of Durrington Walls with 993 barrows in 200 km² (496/100); the Dorset Ridgeway south of Mt. Pleasant and Greyhound Yard, 490 barrows in 100 km²; Cranborne Chase west from the Knowlton Circles, 273 barrows in 75 km² (364/100); and the downs west of Avebury with 238 barrows in 75 km² (319/100). The association of the barrow concentrations with the major henge monuments is evident, suggesting a continuing division of the region into four chiefdoms. These chiefdoms were, however, not equal in their control of labor through time. Starting with a basic equality among the four centers in the Late Neolithic, the Stonehenge and Avebury polities seem to have emerged as dominant. Sometime during the Early Bronze Age, the Stonehenge region may then have asserted dominion over most of Wessex as seen in the concentration of barrows and the unusual wealth in those burials.

The increasing scale of political integration indicated by the pattern of monuments translates into a significant increase in the overall control of labor during the Age of Stonehenge. Without a more detailed chronology, I will simply consider the aggregate construction for the time period averaged across eighty generations; this calculates as perhaps 38,200 ld/g, a threefold increase over the Age of Early Farmers and much greater than we are estimating for the Hawaiian chiefdoms. [Table 13.1](#) presents the rough calculations.

For the Age of Stonehenge, the political organization of Wessex continued to contain multiple competing regional chiefdoms. These chiefdoms apparently

TABLE 13.1 Labor investments in monumental construction during the Age of Stonehenge(3000-1400 B.C.)

<i>Monument Type</i>	<i>Number</i>	<i>Investment per</i>	<i>Total Investment</i>
Large henges	6	500,000	3,000,000
Small henges	25	10,000	250,000
Special monuments			
Stonehenge II, III	1	2,000,000	2,000,000
Silbury Hill	1	4,000,000	4,000,000
Round barrows	8,000	750	6,000,000
			15,250,000

NOTE: Investment per generation = 191,000 mh.

consolidated power quite considerably through time and shifted their structural representation from the corporate ceremonial monuments to the more network-strategy or individualizing chiefdoms represented by the barrow cemeteries. Finance appears to have relied on the production and distribution of cattle as mobile, locally produced wealth, and the monuments probably defined the pasturelands of the chiefdoms. Later on, with the construction of

the barrow cemeteries, cattle products probably became more controlled individually by chiefs for use as a medium of exchange to trade for nonlocal wealth, especially metal but also amber from Denmark, which were used to show individual status.

At the beginning of the Age of Hill Forts, although the chronology is not yet fully clear, small settlement enclosures are found, often associated with elaborate new field systems and urnfield cemeteries. These enclosures, probably representing hamlet-sized defended residences, are broadly distributed in the chalk lands and in the lowlands, especially to the east where settlement earlier had been thin. Forty-five percent of the grid units contained enclosures, many dating to the Later Bronze Age. Some concentrations of enclosures exist, as in Hampshire, but the overall impression is the division of the landscape into many small-scale polities. During the Iron Age, the broad settlement distribution continued as 39 percent of the grid units contain settlements. The most important settlements of this period are the hill forts themselves, recorded in 22 percent of the grid squares. Many of the forts were quite small, only a few hectares in area surrounded by a single ditch and bank, but, later on, the sizes of some forts expanded to greater than 5 ha, and were often surrounded by multiple banks and ditches. Within many of the forts, the extensive grain storage structures indicate the probable importance of a new staple finance system.

A regional settlement hierarchy, indicative of competing polities, is clearly documented archaeologically. The multiwalled forts, greater than 4.9 ha, show a tendency toward regular spacing (Hodder and Orton 1976: 46), indicative of interfort political competition and independence. Several smaller forts, enclosures, and undefended settlements found within the catchment areas of the larger forts were probably dominated politically by these settlements (Palmer 1984). Size of polities was, however, not large; distances separating the larger forts averaged only 6.5 km. Many independent polities probably existed until just before the Roman conquest, when larger-scale chiefdoms were apparently reestablished under the influence of intense external trade with the Roman world (Cunliffe 1984).

During this period, the construction of monuments per se ceased. Ceremonial sites such as Stonehenge, Avebury, and Mt. Pleasant were abandoned after many hundreds of years of cyclical reuse. Nothing replaced them, except for the considerable labor that went into construction of elaborate field systems and the fortified settlements. Burial practice was transformed with nonmonumental cremation cemeteries in the Later Bronze Age and simple interment burials, often in storage pits, during the Iron Age.

The labor invested in the fortifications calculates as 24,800 ld/g, assuming seventy generations, as seen in [Table 13.2](#). This may represent some decrease in

the amount of organized construction, but it most obviously represents a major change in the *goals* of construction. The extent to which we are even dealing with monumental construction is in question; certainly no explicit ceremonial or burial monuments were built at this time. The construction of the hill forts and the field systems, however, should not be dismissed as simply utilitarian as it may signal a major transformation in the nature of economic and ideological control. Again what is needed is a closer control over the timing of construction to see whether there were particular periods of rapid landscape restructuring associated with the instituting of new political structures. With the transition to the Age of Hill Forts, social organization changed dramatically. In a good example of devolution (Kristiansen 1991), the Early Bronze Age chiefdoms fragmented, to be replaced by relatively local polities. During the Iron Age then, the spatial extent of the polities remained small, not because of their simple organizational structure, which was most probably that of chiefdoms, but because of the change in the nature of finance from a mobile wealth finance that permitted spatial expansion to a staple finance system that restricted it. As I now discuss, associated with this change in finance were necessary changes in how the landscape was structured to demarcate a new system of land tenure.

TABLE 13.2 Labor investments in fortification during the Age of Hill Forts (1400 B.C.—A.D. 43)

Type of Fortification	Number	Investment per	Total Investment
Enclosures	445	2,500	1,112,500
Small hill forts	136	25,000	3,400,000
Large hill forts	23	200,000	4,140,000
			8,652,500

NOTE: Investment per generation = 124,000 mh.

Changing Patterns of Land Tenure: A Suggestion

During the 4,000 years of prehistory just summarized, major transformations are apparent in the nature of political organization. Causes for these political changes were not simply demographic or environmental, but reflected systematic changes in the political economy. Specifically, by changing the system of land tenure as represented by an altered landscape in Wessex, chiefs changed the way in which labor could be controlled so as to finance their regional institutions.

During the Age of Early Farmers, a fairly rapid growth in population and intensification of land use led to intergroup competition and warfare. The area

of Wessex became divided up into polities varying in size and complexity. The construction of long barrows represented the explicit definition of territories associated with local kin-based groups and their ancestors. The construction of these long barrows can, in my estimation, be best interpreted as an elaboration of ceremonies of place; in essence, their construction planted the ancestral lines in the landscape, creating lands owned by corporate groups (Bradley 1991). The burial monuments of Early Neolithic Denmark would be directly comparable ([Chapter 12](#)).

These corporate groups were then embedded in a regional system connected to the causewayed enclosures and the major cursus monuments. In Denmark, similar regional causewayed enclosures are also known. Essentially the landscape became transformed from an unmarked natural world to one carefully demarcated and associated with corporate kin groups. The role of kinship as seen in the ritual significance of ancestors illustrates the organizing kinship principles that Kristiansen (1991) singles out for chiefdoms. It is important to emphasize, however, that these kinship principles were *not* an abstract calculus but were firmly planted through monumental construction in a physical landscape. In other words, it was not the relationship within people that was most important, but the relationships between people and emerging corporate groups that became relevant.

During the Age of Stonehenge, the gradual expansion of population and of a political economy based on pastoralism resulted in a full clearing of the landscape and movement into ecologically unstable regions. The Danish expansion appears to be remarkably similar ([Chapter 12](#)). The social outcome was an initial expansion in the number of polities, each centered on a major henge monument similar in labor investment to the cursus monuments.

The main changes during the Age of Stonehenge were ideological but firmly grounded in a manufactured landscape. The major monuments, I suggest, created a sacred space set off for ceremonies that fundamentally separated the rulers from the ruled and identified their legitimacy with universal forces outside the world accessible to commoners. As on the Hawaiian Islands, the ceremonies associated with the major monuments probably involved basic generative rituals conducted by the chiefs. Beginning with the layout of the Dorset Cursus and most notably with the solar alignment of Stonehenge, the monuments took on an internal organization aligned on the movement of the heavenly bodies. "By bringing the sky's cosmic order down to earth, monumental architecture creates sacred space" (Krupp 1983: 229). Thus, in the ceremonies, chiefs became more than local leaders; they would have acted as gods. Interestingly, such monuments were not constructed in the Danish situation.

By constructing these ceremonial places, the chiefs of Wessex also created

landmarks that visually dominated the open environment of Wessex and would have asserted ownership over the surrounding pastoral lands. As a general principle, resources become owned when they have been improved by an individual. The capital investment in the monument thus would have created ownership resting squarely in the hands of the chief who supervised their building and supported their associated ceremonies. The close association of the most impressive barrow cemeteries with the existing monuments supports this later identification of the chiefs with the henges and their ceremonies.

The development in the political economy during the Age of Stonehenge was apparently predicated on a system of wealth finance. At the monuments, the ceremonies were the sacred gathering places where labor, wealth, and subsistence goods could be concentrated and exchanged (Friedman and Rowlands 1977). Early on, finance was apparently based on the production and distribution of animals, as identified by the location of the monuments in areas of good pasture and by evidence for ceremonial consumption of meat at the enclosures. In several cases, an individual barrow burial contained parts of cattle, such as the head, indicating a clear ritual association. Later the wealth finance shifted to the importation of bronze metals and other esoteric goods used to signal individual status differences in the burials and probably in life. The reason to add the use of esoteric wealth in finance to the use of the cattle might have been the ease of movement and central control over distribution allowed in wealth exchange. Under competitive interaction, chiefs must strive to expand their power base in order to retain their political position.

The apparent demographic and social dislocation at the transition to the Age of Hill Forts indicates a major economic transformation. I have suggested that this transformation resulted from a cyclical collapse of the chiefly economy; the degraded resource base on the margins undercut animal production and/or a loss of control over the long-distance metal objects of wealth, which shifted the center of political activity to the Thames River Valley (Bradley 1991). The growth in a wealth finance system can rarely be sustained because of problems of inflation, depletion, and overextension. For whatever particular reason, wealth finance systems are inherently unstable, and periodic collapses occur commonly ([Chapters 3, 8, and 12](#)).

After the regional chiefdoms broke down, a new form of chiefdom arose based on staple finance indicated so clearly archaeologically by the central storage facilities for grain. This staple finance system would have involved direct control over staple production through carefully delimited ownership of land. It is at this time that the coaxial field systems appear in Wessex. These fields, although surely an indication of capital investment in agricultural development, also represent a regular division of the landscape that does not

consider topography and specific local conditions. Fleming (1979, 1989) describes the large scale of many of these field systems that can cover hundreds of square kilometers. The regional scope of the planning seen in the fields' layout is evidence for their politically motivated design from the top, rather than for local agronomic design. The new field systems appear as social divisions of the landscape with major boundary markers and regularly laid out local fields (Fleming 1982).

The field systems may represent a new system of land ownership analogous to what I propose for the evolution of Hawaiian chiefdoms (Earle 2000, 2001). The divided landscape was, I suggest, a new pattern of ownership in which a natural world had become developed and assigned. The field systems portrayed physically the pattern described for Hawaii, where access to carefully defined land can be traded off for labor and staple materials. The hill forts came to serve as the real and symbolic guarantee of this new system of land ownership.

Conclusions

The discussions that took place in the Advanced Seminar on chiefdoms (Earle 1989) repeatedly focused on the nature of control as the fundamental process for the evolution of chiefdoms. A split existed between those participants who emphasized economic controls vs. those who emphasized ideological controls. The Hawaiian and Wessex cases help resolve this split by clarifying how the two forms of control are interdependent. I argued that although alternative sources of power certainly existed, real economic power was basic because only it could be controlled across generations to give the stability on which a polity must be based. Although I stand by this interpretation, I now feel that it is necessary to determine what constitutes "real" economic control. As the two cases reviewed here demonstrate, economic and ideological powers come together: The economic base gives the stability for the control as the ideology gives it legitimacy. For example, in the Wessex case, the tremendous investment of labor in ceremonial architecture can be seen as a means to ground the ideology in a physical reality owned and controlled by the chiefs. The monuments thus became a symbolic capital grafted onto a system of land tenure by which labor could be managed to supply financing capital to the chiefs. In this chapter I emphasize the role of resource control and associated land tenure on the development of the political economy. This theoretical position is particularly suited to investigation with archaeological data because the physical restructuring of the landscape in the process of created ownership

is often clearly visible in the design and pattern of ritual monuments and field systems. Variation in labor investment becomes an effective way to study changing patterns of labor mobilization as political economies develop and transform. The contrasting character of the relatively simple Wessex chiefdoms and the complex Hawaiian chiefdoms illustrates the potential value of labor to study variation between lines of chiefly development.

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Ideology, Materialization, and Power Strategies

In recent years, archaeologists representing both the processual and post-processual perspectives have examined the nature of ideology and its role in the development of complex societies (Cowgill 1993; Conrad and Demarest 1984; Demarest and Conrad 1992; Earle 1989; Hodder 1982b; Miller and Tilley 1984; Renfrew and Zubrow 1994). The positions taken in these essays have been as diverse as the theoretical backgrounds of their authors, but their approaches to ideology generally can be characterized in several basic ways. Ideology is epiphenomenal for some, determined by the organization of production within a society. Others view ideology, and often its specific content, as active elements that influence sociopolitical institutions and economic organization, but find the explanation of this process problematic. Finally, for some, ideology is the expression of the inner self, multiplying the potential number of ideologies infinitely.

We approach ideology differently, recognizing it as a central element of a cultural system. The direction we pursue here is to understand ideology as a source of social power. Social power is the capacity to control and manage the labor and activities of a group to gain access to the benefits of social action. Michael Mann (1986) has identified four sources of power: economic, political, military, and ideological power. Throughout history, rulers and chiefs have combined these sources of power in distinct ways to achieve specific goals. The choice of one strategy over another has profound implications for social evolution ([Chapter 3](#); Earle 1997; Johnson and Earle 2000). Such choices reflect the historical circumstances and the objectives of groups (Brumfiel 1992) and have markedly different costs, effectiveness, and sustainability.

In some instances, power depends heavily on the coercive effects of military action; Carneiro (1981; Spencer 1967 [1882]) and Webster (1975) have identified circumstances under which military might provides an immediate means to extend political dominance. Effective in the short run, especially where control over the means of destruction is possible (Goody 1971), warfare is nevertheless a costly and unstable means to organize power relationships. Others ([Chapter 13](#); Brumfiel and Earle 1987; Earle 1989; Gilman 1981) have argued for the ultimate precedence of economic control, where land tenure systems and property rights permit direct control over production and exchange. However,

economic control is problematic except in such circumstances as the development of irrigation systems, within which an agrarian population can be "caged" (Chapter 5; Mann 1986), or in an insular setting where control of the seaways provides similar opportunities for elites to limit access to goods and resources.

In still other cases, the strategic control of ideology contributes to the centralization and consolidation of political power. Following Thompson (1990), we define ideology as the ways in which a dominant individual or group uses meaning and symbolic representations to create and maintain positions of power and authority over others. We evaluate the relative costs and effectiveness of strategies that emphasize ideology and examine how ideology is linked to other sources of power. As archaeologists, we see a tremendous limitation in approaches that view ideology solely as ideas and beliefs that are rarely preserved in the archaeological record. We believe that ideology is as much the material means to communicate and manipulate ideas, as it is the ideas themselves. Ideology has, therefore, both a material and a symbolic component. Because symbols are material objects, their distributions and associations, preserved in the archaeological record, reflect broader patterns of social, political, and economic activity. These patterns inform archaeologists about unequal access to symbols of status or authority, the efforts of one social segment to promote its ideology over others, and the effects of these strategic activities on the dynamics of social power.

Symbols, including icons, rituals, monuments, and written texts, all convey and transmit information and meaning to their viewers. These symbolic messages, or meanings, and especially the ways in which different individuals perceived these meanings in the past, may prove difficult for archaeologists to reconstruct. We are interested in the study of these meanings, but here we focus specifically on ideology as social power. What gives primacy to one ideology over another? How can an ideology supporting domination be sustained in the presence of an ideology of resistance? The answer, we argue, is grounded in the processes by which these ideologies are given concrete, physical form. This process is the *materialization of ideology*.

We argue that ideology is materialized in distinct and concrete forms (or *means* of materialization) to become an effective source of power. These means include ceremonies, symbolic objects, monuments, and writing systems. Like materialized culture, materialized ideology can achieve the status of shared values and beliefs. Materialization makes it possible to extend ideologies beyond the local group and to communicate the power of a central authority to a broader population. We examine this process and, in three case studies, consider its effects on political power and institutions, the political economy, and the dynamics of organizational change. Given the scope of our discussion

here, we do not address the ways in which our ideas apply to the study of less complex societies. In addition, although we are omitting a lengthy consideration of the relationships between ideologies of domination and resistance (Miller et al. 1989; McGuire 1992), we view the process of materialization as an ongoing arena for competition, control of meaning, and the negotiation of power relationships.

Culture, Ideology, and Their Materialization

Materialization is the transformation of ideas, values, stories, myths, and the like into a physical reality that can take the form of ceremonial events, symbolic objects, monuments, and writing systems.¹ If we think of culture as norms and values held in people's heads, it is difficult to understand how culture could be broadly shared at all. Human societies are inherently fragmented, representing many voices that characterize differences of age, sex, occupation, locality, class, and individuality (Keesing 1985). Each human being, influenced by experience, has an individualized reality. To exist outside of an individual's mind, culture is created in daily practice (Bourdieu 1977; Giddens 1979, 1984). We argue that creating material representation is a central part of this process. Small groups, living closely together, as in an extended family, might have the intimacy and communication to share, to some degree, a common understanding of the world. Beyond the family group, however, values and norms are materialized to be shared more broadly. The forms of this materialization range from storytelling and other performances, to the making of symbols, to the construction of mounds and pyramids, to writing in all its forms.

By using the term materialization (rather than materiality), we emphasize the ongoing process of creation and do not assume the primacy of ideas. In fact, the ideas and norms of culture and ideology are encapsulated as much in their practice and in the conditions of daily life, as inside individuals' minds. To materialize culture is to participate in the active, ongoing process of creating and negotiating meaning. Because ideology is part of culture, materialization of ideology is a similar process, usually undertaken by dominant social segments. Its goal is to facilitate the common, shared experiences of political culture described by Kus (1989). Like materialized culture, materialized ideology molds individual beliefs for collective social action. It organizes and gives meaning to the external world through the tangible, shared forms of ceremonies, symbols, monumental architecture, and writing. Materialization of ideology, at the same time, is a strategic process in

which leaders allocate resources to strengthen and legitimize institutions of elite control. Thus the character of political power and ideology, and their ties to the economy, will be reflected by the specific means and forms of materialization within a society.

In this chapter we focus on the materialization of ideology because we believe that archaeologists are especially well positioned to reconstruct this process. While archaeologists may be ill-equipped to study specific thought processes, which require the daunting task of creating a "middle-range theory" of the mind (Cowgill 1993), we can examine how materialization creates a shared political culture over time. We can study the explicit and vivid materialization of ideology in past societies, examining the investment itself (what was done with the available social capital) and the outcome of these decisions (the ways in which the investment affected the stability and subsequent history of a society). Since the ideas and precepts of an ideology are made physical in order to be promulgated over a broad region and through time, the archaeologist comes into contact with the same materials created to mold the minds of peasants and subjugated populations. Different groups may promote competing ideologies through materialization and, over time, the economic consequences of this activity, as well as varying success in institutionalizing the ideology and overcoming dissent, may enable one social segment to consolidate its position. Thus, by viewing materialization as an economic process, it becomes possible to see how social power and control of ideology derive from these strategic choices, as well as how they may contribute to organizational change within a society.

Materialization confers social power in two basic senses. First, an elite with the resources to extend and control ideology through materialization promotes its objectives and legitimacy at the expense of competing groups who lack the resources for materialization. Because elements of materialized ideology have the characteristics of other manufactured goods at the same time that they retain their symbolic character and meaning, we can understand how control of the economy or of labor extends to control of ideology. The costs of hosting a feast, constructing a monument, or manufacturing paraphernalia and costumes for events ground ideology in the economy. An ideology rooted in a material medium can be controlled in much the same way that other utilitarian and wealth goods may be owned, restricted, and transferred through the institutions of political economy.

Second, materialization is the process that transforms ideology from an inherently weak source of social power into a significant element of political strategy. Because ideas and meaning are difficult to control, it is impossible to prevent individuals who oppose the dominant group from generating their own ideas about the world and then attempting to convince others of their

validity. Ideologies, and the manipulation of meaning, can be as much a means to resist as to legitimize authority (McGuire 1992; McGuire and Paynter 1991; Miller 1982; Miller et al. 1989). However, an ideology comprising solely elements freely accessible to the populace has little efficacy as an instrument of power; it may easily be copied. Such an ideology may exist alongside the materialized ideology of a dominant social segment, but its capacity to restructure power relationships or to effect organizational change will be limited. Materialization makes it possible, through production and transmission of ideas, traditions, and meanings, to establish and reinforce the legitimacy and rights of the group that controls their material forms.

Means and Forms of Materialization

In this section, we consider four means of materialization: ceremonial events, symbolic objects, public monuments, and writing systems. Within each *means* of materialization, there exist innumerable *forms*, so that, for example, a speech represents one form of ceremonial event. Broadly, each means differs in terms of the audience to whom it can be directed and in the ways it can be produced and how it may be manipulated. The selection of one means over the others, and its specific form as well, can therefore profoundly affect the nature of the ideology and its effectiveness as a source of social power. A given means may be more or less successful in accomplishing a particular objective; for example, ceremonies are events that integrate and define large groups. Many symbolic objects are transportable, given as rewards to individuals or as emblems of social status or political office. Monumental architecture is a means of communicating on a grand scale, so that central places arise not only to house the activities of political life, but also to serve as the symbolic focus of a polity.

By examining the means and forms of materialization, as well as the way resources were allocated to alternative sources of power within a political economy, we can begin to reconstruct the strategies through which ideologies were generated. Because the impact of each of these means is distinct, and because each requires different raw materials, labor input, organization, and skills to carry out, the adoption of a particular means depends upon a leader's capabilities and resources. Similarly, the economic infrastructure will influence the resources that can be allocated to materialization. In more complex societies, a wider range of resources and labor can be devoted to this process, with the result that ideologies are materialized using diverse means and forms, in order to accomplish the coincident goals of integration, communication, and

coercion among a large and widespread populace.

Ceremonial Events

Events create common, shared experiences among audience members through participation in rituals or feasts, or attendance at speeches or performances. Because of their immediacy, rituals and events are especially powerful means to negotiate power relationships at all levels, from the status competitions of local chiefs to the enculturation of newly conquered people within an empire. The social and political significance of feasts, for example, has recently been discussed extensively (Dietler and Hayden 2001). Many ceremonial events are strictly prescribed in form, participation, and sequence (Geertz 1973, 1980). Often they involve cyclical or repetitive actions, when participants perform the mythical or ritual narratives of their society.

In many societies, ceremonies are repetitive, precisely timed to mark agricultural or ritual cycles. For this reason, many events follow a regular schedule, known to the members of a society. They may be organized around a mythical narrative that is reproduced and made real again during each performance. Among the farmers of the Funnel Beaker Culture in Thy, Denmark, ceremonial events apparently emphasized corporate group identity through communal burial rituals that emphasized ancestral ties to the land. While events have an immediate impact on their participants and audiences, they are also by nature transitory, so that shared experience and group solidarity begin to fade when they have ended (Leach 1954).

The long-term effectiveness of most feasts and ceremonies depends upon repetition. They involve periodically the consumption of staple goods and the use of icons or other symbolic paraphernalia for their staging. Consequently, resources invested in events generally are not capital investments. Unlike the enduring infrastructure of materialized ideology created by monumental construction and, in some cases, the manufacture of symbolic goods, events require continuing investment of resources for their performance. In ranked societies, competition for prestige and power often takes the form of feasting (Rosman and Rubel 1971). Chiefs may regularly host feasts to demonstrate their capacity to marshal quantities of food beyond the reach of others (Barnes 1988). Such ongoing hospitality may lead to dependency and, at the same time, encourage loyalty from followers who come to rely upon landed chiefs to help meet their daily subsistence needs (Barth 1965).

At the state level, the costs of sponsoring a large-scale feast or ceremony surpass the resources of a single individual. The vast storage facilities of the Inka empire are testimony to the enormous cost, as well as the organizational

logistics, undertaken by the state to underwrite its frequent feasts (Chapter 8; LeVine 1993; Morris 1967). State events may clearly demonstrate the asymmetry of power relationships. The ruling elite may designate sacred spaces or construct facilities for events in order to limit access to ceremonial spaces and the events taking place within them. Ritual events may be organizationally complex, supported by state institutions and specialist personnel, who coordinate events that may include skilled performers whose actions may be spectacular or even life-threatening. Some elements of the state ideology may include vivid images of coercion, such as human sacrifice. Ritual paraphernalia is carefully manufactured to exact standards, made for use in the performance. These costs, complexities, and scale demonstrate through dramatic short-term images the hierarchical organization of the state and its apparent monopoly on such performances.

Symbolic Objects and Icons

Objects and icons, as materialized ideology, include the paraphernalia used in performances, ritual attire, mural paintings, and icons and emblems in any form. Portable objects facilitate symbolic communication among individuals, within social segments, and, more broadly, between polities (Hodder 1982a). As items of personal decoration, they communicate information about gender, age, group membership, or social position (Wobst 1977). Icons of public display can communicate a standardized, narrative message to many individuals simultaneously.

Symbolic objects are especially efficient for long-distance communication between elites, or more broadly among political allies or social groups. In this context they signify relations of dependency, affiliation, or correspondence. Symbols exchanged or distributed within social segments or lineages create or reinforce vertical as well as horizontal relationships, and help to generate loyalties and consensus among individuals (Brumfiel and Earle 1987; Friedman and Rowlands 1977). Ceremonial paraphernalia or status symbols are often paraded or displayed in ritual contexts, and because these objects can contain coded information, they may also serve as mechanisms for narrative representations. Complex iconographic systems, such as the Moche ideology discussed below, combine the immediacy of performance with the visual impact of often familiar objects and icons to communicate directly with a large audience. The use of these interdependent means of materialization strengthens the overall message and creates a vivid experience of the ideology.

Because symbolic objects can also be owned, inherited, and transferred, they are ideal signifiers of individual social position and political power. Most such

objects are probably inalienable in the sense that they would have been exchanged only in highly charged political spheres of exchange (Chapter 2). In burials, grave goods accomplish this function even beyond death. As materialized ideology, symbolic objects, like wealth goods, may be restricted in circulation and highly valued. However, a wide range of forms characterizes these symbolic objects. Some, like wealth goods (Chapter 8), are made of exotic or rare raw materials, prized for their commercial value as well as for their meaning. Many also carry direct messages about social position and identity (Wobst 1977). To maintain the value and exclusive associations of these objects, elites may limit access to the raw materials used in their production, to the technology of their manufacture, or to the skilled labor necessary for their creation.

Another source of value and meaning for symbolic objects may be their unique histories of ownership and exchange (Weiner 1992), or their direct association with an elite lineage or deity. These types of symbol may have high intrinsic worth, based primarily on their ideological context, independent of their production costs. In these cases an object may be made of inexpensive materials (e.g., royal insignia), or have a unique context of production and use (e.g., ancient Olympic laurel wreaths). Similarly, skillfully crafted objects may have great value in a particular cultural context, but in absolute terms may have "cost" little more than the food required by the artisans who produced them. In contrast to more expensive feasts and monumental construction projects, some symbolic objects may effectively materialize social position at low production costs if their ownership or history can be carefully protected.

Public Monuments and Landscapes

Public monuments and landscapes are mounds or pyramids, ceremonial facilities, large buildings and centers of political activity, or defensive structures that associate a group with a place and represent the power and authority of its leaders. Monuments can be impressive, even overwhelming constructions that are "experienced" simultaneously by a large audience. Monuments are effective and enduring means of communication, often expressing relatively unambiguous messages of power (Kolb 1994; Trigger 1990). Large monuments may be visible to vast populations across broad geographic areas, making them ideal for indoctrination, population control, and the dissemination of propaganda. This elemental message often crosscuts differences in language, age, gender, or cultural affiliation.

Precisely because of its scale and cost, materialization through monumental architecture may be restricted to those agents within a society who possess the

resources to undertake massive construction projects. Pyramids and large mounds, as well as rearrangements of the landscape such as artificial hills or barrows, require enormous inputs of labor and materials (Abrams 1989). Construction also requires planning, management, and the organization of labor crews and raw materials. Monumental construction may take place fairly rapidly, demonstrating a leader's capacity to marshal labor and resources. In other cases, less complex societies such as the Neolithic chiefdoms of Wessex (Chapter 13) or the Preceramic societies of coastal Peru (Feldman 1987) have created structures of impressive size, suggesting that some projects are "works in progress," built through the sustained input of labor over time. This labor may derive from regular taxation in the form of *corvée*, so that inasmuch as there is a population to be taxed, monuments will grow in size or increase in number. Many Moche ceremonial centers were constructed of multiple discrete sections, each apparently contributed by a different population under elite control (Hastings and Moseley 1975).

Monuments and ordered landscapes domesticate unused territories and symbolize the appropriation of space (Kus 1982), organizing and materializing social relationships and boundaries. Monumental architecture also defines vertical relations within society. Within a settlement hierarchy, public spaces and ceremonial facilities generally appear first in regional centers (Flannery 1976), where they serve as the central focus of power, representing the elite monopoly on civic-ceremonial activity. Thus the distribution of settlements and public architecture across a landscape serves as a map of a sociopolitical system. In Cuzco, the center of the Inka empire, a system of radiating lines, the *zeque* system, expressed and ordered the relationships between corporate groups, their productive lands, and the cosmos (Hyslop 1990; Zuidema 1964, 1983).

Among a political elite, monuments may be subject to ownership, transference, and inheritance, as long-term capital investments. Unlike events, which are repeated regularly and which can be adapted to changing circumstances, monuments are more permanent expressions of the ideology that links a group to its territory. Although the meanings expressed in a cultural landscape may change, monuments nevertheless strengthen the association of a group with a place. Long after a ruler has died or a polity has disintegrated, monuments such as Stonehenge or the pyramids in Egypt remain standing, evoking the history of a place and defying time, giving the impression of permanence and transcendence to ancient societies (Wilson 1988).

Other monuments are built as facilities, or settings for ritual events (Barrett 1994). These events often are rituals that imbue portable objects with meaning. Thus, as constructed spaces, facilities are closely connected to other elements

of the ongoing process of materialization. By exercising ownership of public facilities, elites can further restrict their use and closely monitor the staging of ceremonies through agents and institutions under their supervision. In both the Denmark and Moche cases discussed here, ritual burials materialized elite control of both landscape and ceremony (Bech and Olsen 1985; Donnan and Castillo 1992). Burial events legitimized elite ownership of ceremonial spaces in life and, significantly, extended their influence beyond death. Thus ownership and elite privilege were sanctioned over generations, ascribed to individuals who could claim consanguinity with their interred ancestors.

Writing Systems

Written documents, such as inscribed stelae or monuments, legal documents, contracts, and stories are physical manifestations of belief systems and, like other means of materialized ideology, can tell a story, legitimize a claim, or transmit a message. While the other means of materialization accomplish this task indirectly through symbols, some texts are explicit and direct. Documents can formalize rules and relationships set out by those in power. In written religions, texts encode scriptures, prayers, and ritual traditions, standardizing these messages to allow their dissemination and adoption over a broad region (Goody 1986).

Written documents, like other narrative media such as oral accounts, speeches, and songs, may communicate political messages or propaganda. These, like speeches and songs performed as events, may glorify a leader's conquests in words "written in stone" that provide enduring messages, carved on the stone faces of monuments. In the Vijayanagara empire of India, inscriptions, located on temples, public works, and slabs placed in villages, publicly recorded the generosity of elites (Morrison and Lycett 1994). Such an inscription may be accurate, or it may be exaggerated, misleading, or even false. If overall literacy rates are low, inscriptions may represent esoteric knowledge held and manipulated by elites or religious personnel, who are indispensable in positions of authority conferred by their literacy skills.

Writing and literacy afford opportunities for strategic control; beyond ideology, of course, the development of writing has had profound effects on human societies and their organization (Goody 1986). Writing requires education and training, so that control of specialists, including scribes and interpreters, can limit access to this form of materialization. In early literate societies, the technologies of writing, including engraving skills and ink and paper manufacture, could be manipulated by elites. Later, the invention of the printing press (Eisenstein 1979) would create opportunities for mass

distribution of information, both in support of, and in opposition to, the established political ideology. Moreover, today's mass media have again profoundly changed the materialization of ideology. Now, due to instant global communication, the image of a leader and debate over policy decisions are under constant public scrutiny, making it exceedingly difficult, but also essential, for leaders to control the images of government that reach the public (Thompson 1990).

Case Studies

We examine the process of materialization of ideology as a source of social power in three archaeological cases: Thy, Denmark; the Moche of Peru; and the Andean Inka. We have selected these cases pragmatically, because we are conducting ongoing research in each case. Our first-hand knowledge informs us about the complexity and dynamism involved in relations of political power. In each situation, leaders sought to establish and maintain political control over large populations. Although this process varied in its methods, sources of power, and goals in each case, the quest for power was common. As we shall demonstrate, ideology became an effective source of power through the process of materialization.

The cases represent an evolutionary spectrum from emergent chiefdoms to massive empires. To some degree, differences in scale, social complexity, and the institutional setting of power relationships account for some variation observed in materialization strategies. The Danish case illustrates that simple chiefdoms are fragile polities, susceptible to fragmentation. Ideology is weakly controlled by chiefs who sponsor small-scale ceremonies, exchange and possess simple symbols of position, and construct modest monuments to their immortality. The Moche case demonstrates that the state is an institutionally more elaborate and stable political formation. Social order is played out through elaborate ceremonies and dramatic symbols that mark hierarchy and order. Complicated narratives that legitimize institutions of control are recreated through ongoing practice. Finally, the expansionist empire, illustrated by the Inka case, suggests that empires may simplify ideology into critical elements that are "transportable" across cultural boundaries. The Inkas expanded and modified existing elements of Andean culture in order to communicate with subject peoples, using materialized ideology because language barriers were common. Inka ideology included representations of military power, state insignia, and massive ceremonialism.

Considerable variation exists among the cases, and, more broadly, we

recognize that historical conditions of culture, institutional structure, and political economy create diverse social trajectories. In the cases that follow, we discuss the materialization of ideology as a mechanism of political evolution and show how this process articulates with broader social and economic processes that underlie the emergence of complex societies.

The Evolution of Chiefdoms: Neolithic and Bronze Ages of Thy, Denmark

From the Early Neolithic into the Bronze Age, the prehistory of northern and western Europe witnessed cycles of chiefly evolution and decline. Despite evident attempts to centralize and institutionalize power, emergent chiefdoms remained limited in scope and stability. Distinguished chiefs might emerge briefly in some regions, such as Wessex and Thy, only to lose power and be eclipsed by another regional development ([Chapters 12 and 13](#); Bradley 1984; Kristiansen 1982). The work being conducted by the Thy Archaeological Project (TAP) in Denmark (Earle et al. 1998) seeks to understand the power strategies of these chiefs. In Thy, ownership of productive resources was a problematic source of power, because its extensive agricultural lands had no developed facilities, like irrigation systems or drainage projects, that could be controlled. Warfare also proved to be an unreliable source of coercive power, because control over the technology of warfare was difficult to maintain. Ideology, considered here, was problematic as well until control over its materialization helped institutionalize a ranked system of warrior chiefs. Several different means of materialization were used in Denmark, but control over the production of public symbols was a critical factor in the region's chiefly power strategies.

In this section, we review the chronological history of how the chiefs developed their hierarchical ideology. A three-period sequence is used: the Early Farmers (4000-2600 B.C.), the Pastoral Warriors (2600-1500 B.C.), and the Early Bronze Age Chiefdoms (1500-1100 B.C.). The stages Pastoral Warriors and Early Bronze Age Chiefdoms span the English Age of Stonehenge considered in [Chapter 13](#). Two key transformations are evident in the Danish case. The first was a cultural shift from the agricultural communities of the Early Farmers, for which group identity was emphasized, to the Pastoral Warrior society, for which attention focused on the individual male warrior. Although economically and culturally distinctive, both these societies were small scale and without strong regional chiefs. The second was the emergence of regional chiefs during the Early Bronze Age. These chiefs were buried with their special swords under earthen mounds that stood prominently in the

landscape.

The means of materialization that appeared with the first economic and cultural transformation—namely, ceremonies, objects, and monuments—were not means or forms that permitted control over their production. Instead, the warrior ideology was effective in centralizing political power only when it could be materialized in publicly displayed symbols (bronze weapons and personal jewelry) manufactured by specialists attached to the chiefs. Chiefly swords defined political office, and personal jewelry defined high-status women. The construction of chiefly burial monuments also helped to institutionalize power relationships in lineages with inherited offices and to claim rights over pastoral lands.

The Early Farmers. The early farmers practiced low-intensity farming and herding in the original forested environment of Thy. They belonged to the Funnel Beaker Culture, whose key cultural theme was identifying a local group through communal burials sometimes in megalithic monuments. Polished axes that would have been used for agricultural clearance were also traded valuables. This society would have been equivalent to a Big Man Collectivity (Kristiansen 1984; Johnson and Earle 2000).

The early megalithic burial mounds were among the most impressive monuments of Thy. To build these monuments required finding large boulders, weighing upwards of 20 tons, dragging them to the construction site, and seemingly miraculously placing them as upright walls and roofing for a central burial chamber. The labor involved in the construction of a passage grave, such as Lundhøj in Thy, was considerable; estimates for England range upwards of 3,000 labor days (ld) of work (Startin 1982). The central chamber was constructed of boulders chinked by careful stonework and a clay cap to make the room fully waterproof. The mounds contained many burials, with skeletons intermixed after their flesh had fallen away. The megalithic monuments were probably associated with rites of passage, constructed as homes for the dead that could be re-opened for additional burials and cyclical rituals of corporate identity with the commingled bones of ancestors (Hodder 1990).

Causewayed enclosures, a second monumental form of the Early Neolithic, were also built at this time in Denmark. One example has been excavated in Thy. Spaced fairly regularly through the landscape, these enclosures were positioned in prominent locations, and within their territory were several megalithic monuments (Madsen 1988). Chains of pits were excavated, and the earth thrown up to build an earthen bank that enclosed a sacred or political space, up to 20 ha in area. Special deposits of animal bone and ceramics were placed in pits filled all at once. Human skeletal material, such as lines of skulls,

documents public ceremonies of death taking place within the enclosures.

Symbolic objects from the Early Farmer period include elaborately decorated ceramics and beautifully polished axes. In front of the entrance facade of the burial monuments, large ceramic vessels were probably associated with death ceremonies (Tilley 1984). Amber necklace pieces were found in the megalithic monuments, but because individual interments were mixed, grave goods cannot be identified with individuals. These objects, made of the local amber, would have been used for personal decoration, but their mixing after death would seem to deemphasize individuality.

Nothing is more characteristic of the Early Farming Period than the thin-butted, polished axes made of special flint from the shaft mines of Thy. These are working axes, used originally to clear the region's forests. The axes are found singly, but also as hoards deposited at sacred, wet locations (bogs, streams, and springs). The symbolic association of the axes with agricultural clearing and water suggests that the axes were significant in fertility rituals.

Pastoral Warriors. Pastoral warriors were low-density herders practicing cereal-grain farming. According to the paleo-pollen record, the original forests of Thy were cleared at this time and the grasslands established. The warriors belonged to the Neolithic Single Grave and Dagger Period Cultures. The key new theme was individual identity, materialized by low burial mounds that marked the graves of single men or women. Long-distance exchange ties were established between northern Jutland and western Bell Beaker settlement areas (Jensen 1982; Vandkilde 1991).

The single grave burial mounds were quite small, about 1 m high and perhaps 6 m in radius. A mound covered one (sometimes two) central interments, laid out in a plank coffin. Labor invested in such monuments was modest, only a fraction of the megalithic mounds. A sequence of burials might be added, one on top of another with new mounding, or several mounds might be arranged in a line. Both patterns suggest family lines. The contrast between the materialized corporate identity of the Early Farmers and the personal kin-line of the Pastoral Warriors probably represents a shift from clan to lineage organization. From the Single Grave Culture onward, placing the dead in the soil of Thy must have created a cultural landscape associated with ("owned" by) specific kin-lines, an important basis for future chiefly organization (Chapter 13).

The use of Bell Beaker ceramics also suggests the importance of ceremonial events. These ceramics were of special forms, including large and small containers. They were stylistically elaborated with detailed geometric incised lines filled with brilliant pigments. A likely use of these vessels would have been for copious consumption of alcohol at ceremonial occasions. The Bell

Beaker phenomenon thus may indicate the development of linked ceremonial events in a peer-polity interaction sphere. Such events would have been both the platform for status rivalry and the arena to establish regional identities of leaders as set apart ideologically from local affiliations. Control over such ceremonial events would, however, have been tenuous at best, as evident in the comparable Moka ceremonies of New Guinea ([Chapter 2](#); Strathern 1971). Such events would have given little opportunity to enlarge relationships or to pass on achieved prestige (contra Friedman and Rowlands 1977).

Symbolic objects in the Single Grave and Bell Beaker contexts evidently emphasized individual status and military standing. Single Grave men's graves were typically marked by a stone battle ax (or sometimes only flint blades); women's graves included amber necklaces, occasionally with many hundred small beads (Bech and Olsen 1985). While female status may still have been marked by items of personal decoration, male objects identified them as warriors. Bell Beaker graves are rare for Thy, but elsewhere they contain beautifully crafted flint daggers. In TAP settlement excavations, flint daggers and arrow points were routinely recovered from all households, suggesting that these symbols of war were generally available. At the same time, amber was little used for personal display, a shift probably related to its export from Denmark to the European prestige-goods exchange systems (Shennan 1982c).

Daggers, used for status display in the Late Neolithic, would have been difficult for chiefs to control. Manufactured in Thy from locally mined flint, they were carefully shaped with grinding and a finishing flaking to create beautifully crafted objects. The high level of craftsmanship in the finishing flaking would have restricted the numbers of knappers able to produce a highest-quality piece, but lower-quality, simpler-flaked daggers were also made from field flints. Interestingly the daggers were modeled after metal daggers from central Europe, suggesting a broad warrior ideology in which group leadership was associated with warrior might. *But the actual objects, manufactured of locally available material, could not be monopolized.* The overall impression is of a warrior society in which individual status was not highly differentiated. The important point is that symbolic objects continued to be manufactured of local materials, but that the dominant symbolic reference of these objects changed to emphasize male warrior status, first with the battle axes and then with the daggers. However, because it was impossible to monopolize access to the wealth, ideological power remained diffuse.

Early Bronze Age Chieftoms. Early Bronze Age chieftoms were low-density herders and agriculturalists living in an open grassland environment. They belonged to the Nordic Bronze Age Culture. Male and female chiefs were buried with fine weapons and wealth of bronze placed underneath barrows.

This was a world of chiefdoms.

Thy is famous for its Bronze Age barrows, the construction of which transformed the landscape. Hilltops were dotted with clusters of the burial mounds. Typically, a central individual was interred within a cist made of glacial boulders. Then a rounded mound was built up with turf and edged with a curb of glacial boulders. Usually only one central burial was laid out before being covered by the barrow, although additional burials were often added later. Several of the monuments that we excavated in Thy showed major rebuilding, with a second construction phase that added a new outer curb and raised the monument's height.

The sizes of the monuments varied. Some barrows, such as the distinctive mound of Bavnehøj in Sønderhå parish, Thy, were over 3 m high and 30 m in diameter. Clustered around it were lesser mounds, most less than 2 m high. Because some monuments required significantly more labor in their manufacture, they probably contained a high chief. But the overall labor invested in individual mounds would not have exceeded that of the earlier megalithic monuments. A fairly small group, working together, could have produced them without great effort.

Nevertheless, these mounds transformed the landscape into cultural regions demarcated and probably owned by local chiefs. The barrows materialized a social hierarchy and the religious sanctity by which it was legitimized. The landscape was transformed from an open, rolling grassland in the Neolithic, to a landscape marked by the monuments of dead chiefs. The dead had been planted in the soil and their places of interment remain marked to the present day. This socially transformed landscape represented a world owned and controlled by the chiefs whose right to leadership was rooted in their living dead ancestors.

It is, however, essential to recognize that the monuments alone were ineffective as a means to consolidate ideological power. Because their scale was modest (perhaps 1,000 1d each), they could have been constructed by simpler social groups to represent a very different ideology. The construction of the monuments, though waxing and waning, seems more likely to represent a continuity in corporate labor practices. Why, then, was labor directed toward materializing individual ascendancy, rather than group identity? Here the key seems to lie instead in the nature of the symbolic objects.

Although the reference of the symbolic objects (male:warfare::female:personal decoration) remained the same as for the preceding Warrior period, the technological character of the objects changed dramatically again. Objects of local manufacture all but ceased to define status. In TAP excavations, ceramics from this period were simplified, with only minimal decorative elaboration. No flint daggers or arrowheads were found. Amber,

although found on all sites, was always raw, probably being collected for export. Symbolic objects were now almost exclusively of bronze, made from tin and copper, and gold, which were not available in Denmark.

During the Early Bronze Age, male status of chiefs was marked by beautifully crafted swords in the Nordic style, distinct from the working swords of associated warriors (Fig. 14.1; Kristiansen 1984). As discussed in Chapter 12, most swords were locally manufactured, and the chiefly swords required lost-wax molding, a sophisticated and difficult production process. The craftsmen able to produce such items would have been few and their activities could quite easily have been controlled by the high chiefs (Kristiansen 1984, 1987, 1991).

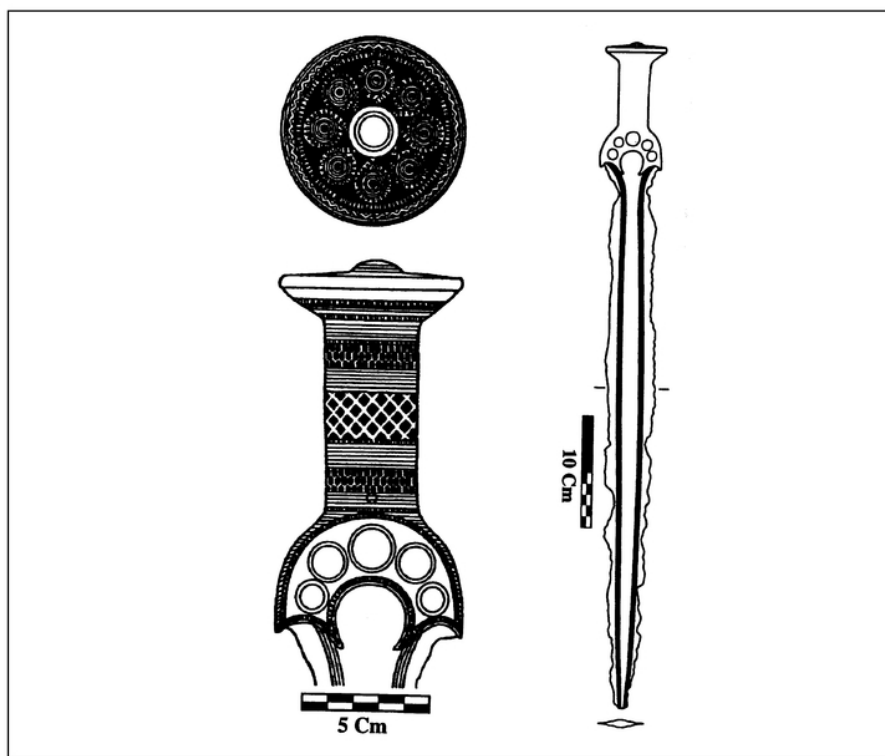


FIGURE 14.1 Early Bronze Age Period II type C sword, from chiefly burial in Tødsø, Thisted Amt, Denmark, (sword no. 105, from Ottenjann 1969)

Thus the key to chiefly status in Denmark during the Early Bronze Age may have been the changing technology of symbolic objects. With a shift to bronze, and away from flint, the weapons and symbols of the warrior chiefs required a sophisticated manufacturing process. As a consequence, chiefs could control artisans as attached specialists (Chapter 6). During the Early Bronze Age, the absence of manufacturing debris for swords found on sites demonstrates how

spatially restricted their production must have been. Chiefs evidently solidified their dominance over both subsistence production and exchange through the direct supervision of sword production.

Female status continued to be identified with fine jewelry that signaled personal distinctiveness and attractiveness. Decorative bronze brooches were frequently found in the Thy barrows, especially late in Period III. In contrast to the swords, these items were manufactured primarily by annealing of traded wire or bars. Annealing, as opposed to casting, is technically quite simple, requiring only heating and hammering of the metal. Brooch fragments from the residence at Bjerre site 6 may well indicate the local fabrication of jewelry here without the supervision of a high chief as probably lived at Legård. Control over the materialization of the ranked ideology would have been possible primarily for the male chiefs identified with the technologically more complex swords. Simpler bronze working, like the earlier flint and amber manufacture, would have been difficult to control. In the Late Bronze Age, this control was totally lost ([Chapter 12](#)).

The use of symbolic objects in Denmark changed dramatically during the time period under consideration. Group identity was deemphasized, and male status came to refer to weapons of destruction. Initially these items, especially the flint daggers, were flint copies of southern Bell Beaker daggers made of metal, but the flint knapping process in Denmark did not permit effective control over these symbols. It was the introduction of bronze working, with the sophisticated technology of the swords, that gave the opportunity for economic control necessary to permit the greater political centralization seen in the Early Bronze Age. Chiefs probably controlled long-distance procurement of metal through elite exchange and alliances, and the manufacture of this wealth could be controlled by patronage ([Chapter 12](#)). The chiefs could thus retain exclusive access to weapons, to symbols of military might, and to an ideology of warrior domination.

Summary. From Funnel Beaker (community and agricultural productivity) to Single Grave (the individual and his status in war or her personal adornment), cultural symbols changed profoundly. The forms of materialization, in earthen monuments, ceremonies, and symbolic objects, continued little changed. Single Grave barrows were sometimes placed on top of, or immediately adjacent to, earlier megalithic monuments. Amber objects and decorated ceramics continued to be found in the burials. While the content of the cultural message changed, the way it was materialized did not.

Importantly, this cultural change introduced a new ideology that would become associated with warrior chiefdoms, but the chiefdoms did not arise. The messages of personal distinctiveness and lineage were in themselves

insufficient to represent the beginnings of chiefdoms. Rather, chiefdoms arose when the male chiefly hierarchy was symbolized in metal weapons of war—swords and daggers. In simple terms, the message of the ideology was important, but the opportunity to control that message through a specific form of materialization, bronze technology, was essential to institutionalize a highly ranked society in the Early Bronze Age.

The Transition from Chiefdoms to State-Level Societies: The Moche Case

The Moche of northern Peru provide some of the most dramatic examples of the effects of materialized ideology in an emerging state-level society. While the Moche have been the subject of numerous recent studies, the data presented here are based primarily on the results of the San José de Moro Archaeological Project, codirected by Christopher B. Donnan and Luis Jaime Castillo. Around A.D. 100, in the fertile coastal valleys of the northern Peruvian desert, Moche society evolved from the fairly simple Virú and Salinar chiefdoms to become, by about A.D. 450, one of the first state-level societies in the Andes. Moche society was clearly stratified into distinct social segments, expressed in differential burial practices (Castillo and Donnan 1994; Donnan 1991) and settlement patterns. Moche settlements vary in both site size and function (Willey 1953; D. Wilson 1988) and within them we can identify socially differentiated areas, or neighborhoods (Bawden 1977, 1982). The Moche economy was characterized by the diversification of production, craft specialization, long-distance exchange, and the construction of a large-scale irrigation infrastructure.

Traditionally, the Moche have been considered a single, unified polity (Larco Hoyle 1945), based on apparent similarities in art styles and ceramic forms. More recent evidence indicates that the Moche comprised at least two independent polities (Donnan 1990), one centered in the southern Moche and Chicama Valleys, and the other occupying centers in the Jequetepeque and Lambayeque Valley systems (Castillo and Donnan 1994). These distinct polities exhibit remarkably different developmental sequences. The northern Moche remained regionally independent states, never expanding beyond their traditional limits. In contrast, by about A.D. 400, the southern Moche had become an expansive territorial state that controlled the valleys located to the south of its original territory. However, in spite of these organizational differences, similarities in material culture indicate that the northern and southern Moche shared a common culture. This common Moche culture is evident in funerary practices, in its dramatic ceremonies, in myths depicted in

murals and painted ceramics, and in ritual paraphernalia.

Throughout their history, ideology and religious performances were apparently a significant source of power for Moche elites. This power strategy included two elements: first, a complex system of ceremonies, enacted by Moche elite individuals, and second, the investment of social wealth into the production of symbolic objects. The goal of the first strategy was to increase social solidarity, involving all levels of society in the state's ritual endeavors. These shared ceremonies created a common ground of symbolic communication within the ranks of the elites, and also between elites and the lower-ranking levels of society. In Moche ceremony, each social segment was ascribed a role that reflected its position in the Moche pantheon of deities and supernatural beings. Only high elites could enact the leading roles, which legitimized their privileged position in society. Moche performances recreated myths and traditions and materialized narratives that represented the past. Through materialization, Moche elites appropriated and owned history and tradition.

The aim of the second strategy, materialization through symbolic objects, was to increase interdependencies and communication among elites, counteracting tendencies toward fragmentation among elites disconnected from the core of Moche society. To do this, Moche's high elite tightly controlled the production of symbolic objects, including both access to the objects and their social uses, carefully monitoring their distribution throughout the lower levels of their own social ranks. This strategy took two forms: vertical communication among elite social strata through redistribution of ritual objects, and horizontal communication among the highest-status elites through exchange of the most elaborate symbolic and exotic objects. Eventually, these activities generated a pan-Moche elite ideology (Castillo 1994).

Ceremonial Events. Moche society shows evidence of complex social stratification in its earliest stages. Burial ceremonies were particularly important in defining both social structure and its supporting ideology. As a result, burial practices are the medium in which many organizational aspects of Moche society are best expressed. The burials vary dramatically in form, in the labor costs of preparing the tomb and the body, and especially in the number and type of symbolic goods accompanying the deceased. An astonishing picture emerges from the study of more than 300 Moche burials that have been excavated archaeologically (Donnan 1991).

Differences in funerary treatment between social segments are usually qualitative; each status group had access to specific types and qualities of symbolic objects. High-status burials frequently contain gold and silver objects, fine ceramics, imported materials such as *Spondylus* shells, and

precious stones such as lapis lazuli and turquoise (Alva and Donnan 1993; Donnan and Castillo 1992). Middle-status burials contain fewer metal and ceramic objects, usually of lesser quality (Donnan and Mackey 1978). Low-status burials generally lack grave goods (Donnan 1991).

Beyond these qualitative differences, quantitative variation also characterizes burials of individuals belonging to the same social segment. Individuals may receive more or less of the same class of object in burials, and this pattern is visible in other aspects of social life as well. Household size, arrangement, and quality of construction materials all appear to be clearly stratified along the same lines as burials. Furthermore, studies of settlement organization demonstrate that social status also implied differential access to ceremonial spaces (Bawden 1977, 1982; Haas 1985).

Preferential access to, and manipulation of, the ceremonial system was clearly an important source of power for Moche elites. Until recently, however, we were unsure whether these relationships were limited to funerary representations of ceremonies and myth. The only available clue was contained in the vivid depictions of Moche iconography, which illustrate ritual deer hunts, dances, or combat. Participants in these scenes appear to be Moche elites; lower-status individuals appear only as service-providers (Donnan 1978). Archaeological evidence confirms that the depicted ritual events actually took place (Castillo 1991; Donnan and Castillo 1992; Donnan and Mackey 1978). Thus, the iconographic representations suggest that elite ceremonies were essential to Moche political ideology and ritual life.

At the same time, Moche ceremonies differed in their importance and impact, depending upon the roles and participants, as well as the message, that each involved. The most complex Moche rituals involved deities and supernatural beings in central roles (Castillo 1989). The Sacrifice Ceremony (Fig. 14.2) was evidently the most dramatic ceremony in the Moche liturgy (Alva and Donnan 1993; Donnan 1975). Four key participants, discussed here, are called Figures A, B, C, and D (the larger four figures on top, from left to right). In the ceremony, defeated warriors are sacrificed by anthropomorphized animals and animated objects who cut their throats, pouring the blood into tall ceremonial goblets (Fig. 14.2, bottom). These goblets are then given to several mythical figures, usually Figure B (a birdlike individual) and Figure C (a female), who present them to two of the paramount Moche deities, Figures A and D, who promptly consume the blood (Fig. 14.2, top). Archaeological evidence indicates that this rite was practiced throughout 450 years of Moche history (Alva and Donnan 1993). This evidence has been recovered in every region under the control of the Moche, either in the form of iconographic representations or in ritual paraphernalia associated with elite burials (Alva and Donnan 1993; Bonavia 1959, 1985; Donnan and Castillo 1992, 1994; Strong

and Evans 1952; Ubbelohde-Doering 1983). Thus, the Sacrifice Ceremony was a pan-Moche ceremonial event, crosscutting political boundaries and giving consistency to Moche culture and ideology



FIGURE 14.2 Moche fine-line representation of the Sacrifice Ceremony, from a Moche IV stirrup-spout bottle, Museo Arqueológico Larco Hoyle, Lima, Peru, (*drawn by S. Castillo*)

Recent excavations uncovered elite burials containing paraphernalia associated with the Sacrifice Ceremony. These objects include the goblet that contained the blood of the prisoners (Donnan and Castillo 1992:40), the scepter of Figure A (Alva and Donnan 1993: 97-101), and clothing elements associated with Figures A, B, and C. These finds demonstrate that some elite individuals personified, probably throughout their lives and certainly at the time of their death, the deities and priests in this ceremony. The symbolic objects found in the graves played a key role in the performances of mythical events that were recreated by living members of the elite to materialize the Moche ideology.

On the basis of the contents of elite tombs at Sipán, in the Lambayeque Valley, Alva and Donnan (1993) suggest that the Lord of Sipán fulfilled in life the ceremonial roles of Figure A. Also at Sipán, the authors have recognized another deity featured in the same ceremony, Figure B, who wears a large birdlike headpiece and is shown presenting the goblet to Figure A (Alva and Donnan 1993: 143-161). At the site of San José de Moro, in the Jequetepeque Valley, Donnan and Castillo (1992) have located two elaborate tombs of females that contain examples of the goblet used in the Sacrifice Ceremony (Castillo and Donnan 1994). These females were buried with the headdress of yet another deity depicted in the Sacrifice Ceremony, Figure C, a female who presents to Figures A and B the goblet full of human blood (Donnan and Castillo 1992: 41). Finding the goblet and headdress together in two roughly contemporaneous tombs confirms that elite individuals personified actual Moche deities and that these roles passed from one individual to the other.

To maintain their rights and legitimacy, Moche elites had to control tightly the material expressions of ideology that defined their positions in society and legitimized their rights to power. An individual's social position conferred or denied access to resources and specified his or her political and ceremonial role. We have found this stratified access to ritual life and its symbols in the variable contents of burials. The highest-status burials contain the actual paraphernalia and ritual attire worn during rituals such as the Sacrifice Ceremony (Alva and Donnan 1993; Donnan and Castillo 1992). Among members of the immediately inferior social level, for example, lower elite individuals in Pacatnamú (Ubbelohde-Doering 1983), we find carved gourds and ceramic vessels with detailed fine-line or three-dimensional representations of ceremonial events, but not the actual paraphernalia. In the middle levels of society we find only representations of parts or elements of the ritual events; this is the case for some infant burials at San José de Moro (Donnan and Castillo n.d.). Finally, burials of members of the lowest levels of society contain almost no evidence for objects of symbolic or ceremonial value (Donnan 1991). This differential access to materialized ideology clearly characterized vertical relations in Moche society.

Symbolic Objects. The materialization of ideology created and maintained the social fabric of Moche society through restricted distribution of ritual or symbolic objects among the ranks of the elites. This pattern reflects a deliberate strategic control of the production and circulation of symbolic objects. As discussed above, elite Moche funerary contexts show preferential access by elites to certain symbols and raw materials, especially fine ceramic vessels. These ceramics were frequently decorated with complex iconography, often narrative in character (Castillo 1991) and finely detailed, as in the representations of the Sacrifice Ceremony (Fig. 14.2). Since only elite burials contain these objects, the vessels, as well as the information coded on them, were probably socially restricted. These objects mark not only the status of the individual in death, but were also used as a means to exercise power in society. We assume that their distribution results from a deliberate policy aimed at limiting access to these objects.

Moche symbolic objects were often the product of skilled labor, and some incorporated exotic raw materials, such as pigments, clays, *Spondylus* shells, or sodalite and turquoise stones. A hypothetical scenario for the production and distribution of ceremonial ceramics can be postulated from studies of ceramic production centers (Russell et al. 1994). The distribution of identifiable ceramic styles suggests that fine ceramics were manufactured in every Moche region, probably with more than one production center within a region at every point in time. Ceramic production was based on the needs of target populations,

taking into account the quality and quantity of vessels necessary to meet the demands of strategic political activity. Unfortunately, we have not yet discovered the centers of manufacture for fine ceramics, although a few middle-range ceramic production centers are now known. Areas producing simple domestic wares are widespread throughout the region (Russell et al. 1994). Logically, we can assume that high elites controlled fine ceramic production, keeping for themselves the more elaborated pieces and restricting access to other pieces, which were given to members of the lower-ranking elite. Other archaeological evidence suggests that rulers of different regions and polities exchanged some of their finest ritual objects (G. Russell, personal communication, 1992).

Symbolic objects were, therefore, a means of communication between elites that integrated their ranks and strengthened their vertical hierarchy. As materialized ideology, they also reinforced horizontal linkages among rulers. Although the Moche peasantry was knowledgeable about the rituals enacted in ceremonial places and familiar with orally transmitted narratives and public renditions of iconography, such as mural paintings, it had no access to the symbolic objects themselves.

At the northern Moche site of San José de Moro (Castillo 1994; Castillo and Donnan 1994; Donnan and Castillo 1992, 1994, n.d.), around A.D. 650 we see for the first time evidence of imported ritual objects, some of them from the central coast valleys of Lima and Lunn, as far as 700 km south. These goods, among the finest produced in their native societies, appear only in the most complex Moche burials and are absent from domestic contexts. This burial pattern implies that the highest ends of the Late Moche elite controlled long-distance exchange in order to monopolize these ritual objects from the then-flourishing central coast societies. Because Moche elites had traditionally relied upon materialized ideology as a source of power, this exchange appears to have been particularly significant for a society in decline, as was the Late Moche.

The introduction of foreign symbolic objects must have severely impacted social relationships among Moche elites. According to our model, the higher elite was obliged to redistribute a portion of the ritual objects they controlled among the lower ranks to maintain reciprocity and generate dependency. However, by importing foreign ceramic objects, Moche higher elites no longer controlled the entire production process. Because foreign ceramics were scarce, they were apparently in short supply. One response was to copy the foreign objects. Some of the copies incorporated Moche elements, while others employed only the foreign forms and design elements. These copies were distributed among the middle and lower ranks of the elite, decreasing in both quantity and quality as we descend the social ladder. This pattern mirrors the distribution pattern of Moche ceramics with complex iconography.

The absence of foreign ceramics throughout earlier Moche history suggests a deliberate effort to prevent these exotic symbols from entering Moche territory and influencing its populace. Political or ideological association with foreign elites appears to have been of little use to the Moche, especially when they were expanding and vigorous states. So what led Moche leaders not only actively to import foreign symbolic objects, but also to copy them? Perhaps these fine objects, as material wealth, were more prestigious than the local versions, and in copying them the Late Moche acknowledged their intrinsic quality, or technical superiority. In this scenario, owning foreign precious objects would have become a matter of prestige and conspicuous consumption for Moche elites (Trigger 1990). Under closer scrutiny, this explanation implies that finely crafted objects are automatically more valuable than simpler goods, regardless of their origin and meaning. From the perspective of materialization, this view is incomplete, because it denies the symbolic value of the objects, considering only their exchange value. In terms of materialization, the importing and reproduction not only of the symbolic objects, but also of the ideology they signified, suggest that Moche elites valued these foreign objects in part because of their symbolic meaning. This meaning might have been reinterpreted to fit Moche canons and used by elites to bolster their social positions. Apparently, they did not succeed, since, less than one generation after the new objects appeared, the Moche were gone for good.

Monumental Architecture. The northern and southern Moche were not comparable in their construction of monumental architecture. The territory controlled by the southern Moche is dotted with some of the most impressive ceremonial pyramids in the New World, such as the Huacas del Sol and de la Luna in the Moche Valley, constructed with more than 100 million adobe bricks (Hastings and Moseley 1975); Huancaco, in the Virú Valley (Willey 1953); and Pañamarca, in the Nepeña Valley (Proulx 1973). In contrast, in the northern Moche territory, ceremonial centers, such as Pacatnamú and San José de Moro in the Jequetepeque Valley, are smaller and less impressive.²

These differences in monumental construction apparently relate to the expansive nature of the southern Moche state. The southern Moche ultimately controlled populations with clearly diverse ethnic backgrounds, but succeeded, surprisingly rapidly, in integrating these populations to the Moche mode of production and geopolitical strategy. This rapid integration has been explained either by reference to the militaristic character of Moche society (D. Wilson 1988), or by assuming a common cultural substratum to all northern coast societies, which facilitated the enculturation process. While both factors probably contributed to Moche expansion, they cannot wholly account for

long-term cultural transformations.

We believe that the strategy of the southern Moche was based at least in part on an ideological infiltration, planned and executed in advance of true geopolitical control, with ceremonial centers of monumental proportions serving as "beach-heads" for this advance. For example, the southernmost valley under Moche influence, the Nepeña Valley, was never completely under Moche control. Surveying this valley, Proulx (1973) found a Moche ceremonial center of monumental proportions, surrounded by residential areas that were clearly inhabited by non-Moche groups. Why do we find a Moche ceremonial center in a territory that is otherwise obviously non-Moche? Rather than serving the needs of a devoted Moche community, this center targeted a local population. This investment in monumental construction, whether built by Moche or local labor, implies that the state was interested first in occupying the minds of the inhabitants, to ease the later occupation of their fields.

Among the northern Moche, materialization of ideology through monuments was not emphasized. Instead, ceremonial events and the controlled circulation of symbolic objects were elaborated and commonly used means of ideological action. These events and objects helped to legitimize the highly stratified social structure. Since the northern Moche were apparently less interested in enculturating foreign populations, their goal seems instead to have been to perpetuate the existing social system and its elite institutions. As a result, monumental architecture, less essential to these objectives, was not broadly undertaken as a part of northern Moche materialization strategy.

Summary. Throughout both the northern and southern Moche states, a pan-Moche iconography sustained a highly stratified social system. Political roles in Moche society were defined and acted out during dramatic ceremonies in which elaborate ritual attire and vivid symbolic images expressed narrative conceptions of Moche elite power and authority. Fine-line drawings materialized scenes of these rituals, and the burials of high elites mirrored their privileged roles in life. The iconographic system institutionalized the stratified character of Moche society; its rich elaboration seemed to heighten the separation between the high elite and Moche peasants.

While the northern and southern Moche polities shared an iconography and social structure, the role of monumental construction in the two regions differed markedly. From the perspective of materialization, we may explain this in terms of contrasting political objectives, viewing the monumental construction activities of the southern Moche, among the most ambitious of those of Peru's early states, as an integral part of the state's expansion. As a whole, the Moche example illustrates the strategic role of an ideology of elite culture and its effectiveness, through materialization, as a source of power.

An Expansionist Empire: The Inka Case

Because of their scale, expanding states and empires face problems of communication and the challenge of establishing authority over conquered groups, who may not share a common language or culture with their rulers. Because ceremony and monumental construction provide direct means of communication that do not depend entirely on shared language or customs, these forms of materialization maybe particularly emphasized in expansion and conquest. Archaeological evidence suggests that these and other forms of materialized ideology played a central role in the Inka expansion.

During the fifteenth century A.D., the Inkas established dominion over a vast territory reaching from Ecuador to Argentina. Beginning as a complex chiefdom centered in Cuzco, Peru, a single ethnic group of probably no more than 100,000, the Inkas built a conquest empire that eventually stretched approximately 4,000 km from north to south. The Inka empire incorporated diverse environments and perhaps 12 million subjects representing more than 100 separate ethnicities. Conquered groups ranged from great coastal states, such as the Chimú, to small-scale tribal societies on the eastern jungle fringe. Recent studies recognize that Inka strategies varied in response to local economies, existing political structure, the resistance of local groups, and the objectives of particular emperors (Bauer 1992; D'Altroy 1992; LeVine 1985). Generally, however, the Inkas conquered strategic, core regions through direct occupation and assimilation. In distant or marginal areas, Inka rulers implemented more indirect rule, through client elites. As part of this process, the Inkas materialized a complex state ideology that promoted a unified Inka culture (Rowe 1982), balanced by elements of coercion.

The strategic character of Inka materialization demonstrates that ideologies do not simply reflect social structure; they are used actively to create it. Inka expansion initially depended on military might, and the continuing threat of force underlay the state's domination (D'Altroy 1992). However, a long-term goal was to solidify and to institutionalize imperial control by exporting a state ideology. At the regional level, feasts structured relations between the state and its subject laborers in terms of traditional Andean reciprocity. For the Inkas, ideology was a crucial means to maintain the state's rights to the taxes (generally, but not entirely, labor service) that financed state activities. This objective is also visible in the state's efforts to create insignia and emblems to identify local elite intermediaries as Inka officials, since these subordinates performed essential duties in their local communities, organizing *corvée* crews and administering other activities on behalf of the state.

Ceremonial Events. Inka feasts were the most direct element of the

relationship between the state and most of its subjects. Inka ritual hospitality materialized the power and wealth of the state on a grand scale. After conquering new territory, the state alienated militarily and symbolically all agricultural lands and then reallocated them to the *ayllu* community as a demonstration of "Inca omniscient benevolence in action" (Murra 1980 [1956]: 94). In granting land rights back to the community, the Inkas legitimized their rights to labor service. In reality, however, the state did not interfere with traditional land tenure practices, and the subsistence and welfare of its members remained the responsibility of the *ayllu*. Subject groups tilled agricultural lands set aside for state use and worked newly defined state lands (Murra 1980 [1956]). Corvee crews formed the military, constructed facilities, temples, and storehouses, and built roads to tie Inka centers together.

The state, in return for these services, hosted work parties in traditional Andean fashion, providing workers with food and *chicha* (Murra 1980 [1956]). Excavations at Huánuco Pampa suggest that state hospitality took place on a massive scale (Morris and Thompson 1985). This Inka center was located far from agricultural lands and local centers of population, yet its many storehouses contained abundant foodstuffs. Central to Huánuco Pampa was an enormous plaza of 19 ha, a setting for the feasts described by early Spanish chroniclers. In the plaza's excavated assemblage, the dominant ceramic vessel form was the *aríbalo*, a large, high-necked Inka liquid storage vessel probably used to serve *chicha* in public ceremonies ([Chapter 11](#)).

Inka feasts thus expressed the state's authority, at the same time embedding it in long-established relationships between a community and its leader (Morris 1985). Maize was a prestige crop in Andean society before the conquest; local chiefs carried heavy jars of *chicha* with them as they traveled, to meet their political obligations (Rostworowski 1977). In excavations in pre-Inka period settlements in the Mantaro Valley, Peru, maize and large liquid storage vessels were found primarily in elite domestic areas, suggesting local hosting by chiefs (Earle et al. 1987; Costin 1986). After the conquest, however, the Inkas appear to have taken over the role of host in this strategic region, as local elite-sponsored feasts declined in frequency ([Chapter 11](#)). Further, as the Inka expanded its ritual role, overall maize consumption greatly increased. Studies of the stable isotope ratios from skeletal material from the Mantaro indicate that males from all households consumed more maize after the conquest, probably in the form of *chicha* served at state-sponsored ceremonies (Hastorf 1990).

In hosting feasts, the Inkas ensured that rights to community labor, formerly a political and economic prerogative of local elites, would instead legitimately belong to the state (Murra 1960). In effect, the state was "earning" its authority (Morris 1982) directly from the populace. Because, as a tributary state, the Inka

empire did not directly control subsistence production, and because it depended upon an extensive bureaucracy, materialization of ideology appears to have played a key role as a source of power and means of integration. Inka feasts reinforced, outwardly, ties of reciprocity that linked the empire's distant, largely self-sufficient subject communities to the center of power, Cuzco, and to the institutions of Inka religion.

At the same time, this was an ideology of coercion, mystifying power relationships and legitimizing the emperor. This hierarchical character is illustrated best by the nature of rites and festivals held at the royal court in Cuzco to observe religious occasions and to celebrate military triumphs. Participants included successful military leaders and provincial elites, among others, who consumed elaborate food and *chicha* and often received gifts of fine metal, elaborate textiles, or precious stones. Chroniclers describe events that included ritual sacrifices of humans, of llamas and other animals, and of sumptuary goods (Guamán Poma 1987 [1614]: Vol. 1, 252-264). At the same time, coercion and military action were integral elements of this materialized ideology. For example, as punishment, two Qolla lords who had led an uprising were flayed. Drums made of their hides were played in the celebrations in Cuzco that followed their defeat (Cobo 1956 [1653]: Vol. 3, Bk. 12, Chap. XIV).

Royal festivals perpetuated the sacred role of Inka rulers. Essentially, ritual events were also political events that elevated the emperor's position, equating him with the divine god of the sun, *Inti*. Ancestor worship was a central theme in Inka religion; the ruling family was said to have descended directly from this deity. Religion and myth augmented the political authority of the emperor, giving him supernatural identity (Rowe 1946; Conrad and Demarest 1984). Even after death, the mummified bodies of the emperors, cared for by their descendants, continued to attend feasts, receive offerings, and observe Inka ritual (Cieza de León 1985 [1553]: Vol. 2, Chap. XI, 27-29, and Chap. XXX, 90-93).

The close interdependence of politics and religion was visible to Bernabé, a Spanish chronicler, who wrote:

The truth is that Inca religion did not remain fixed and unchanging from the birth of the realm onward; they did not cling to the same few beliefs or worship the same few god.... They were induced to make changes in [religious] matters because they began to realize that in this way they could strengthen themselves and keep the kingdom under tighter control. [Cobo 1892 [1653]: Vol. 3, Bk. 13, Chap. I, 302, translation from Conrad and Demarest 1984: 109]

Inka ritual events were therefore political activities, and thus they targeted specific participants. Materialized ideology was meant to create shared experience and to perpetuate the unquestioned power of the state, especially among unruly and rebellious groups. In the provinces, large feasts emphasized

the state's generosity among peasant laborers to legitimize labor obligations. When the Inka lord and his retinue traveled to the provinces, he went forth on a golden litter surrounded by emblems of the sun and moon and other sacred symbols of the royal lineage (Cieza de León 1985 [1553]: Vol. 2, Chap. XX, 56-59). Festivals in Cuzco were aimed at provincial elites (and others), who visited the capital regularly, presumably to experience first-hand the wealth and privilege of the emperor. To integrate provincial elites more readily, Inka policy required their sons to spend time in Cuzco to learn the Inka language and to become familiar with Inka customs and culture (Cieza de León 1985 [1553]: Vol. 2, Chap. XIV, 37-39).

Symbolic Objects. Inka ideology fostered associations that linked Inka symbolic objects and state insignia with the emperor. Through materialization, the ritual and political meanings of symbolic objects were closely tied. State insignia, including finely woven cloth and metal objects, were given as gifts to strengthen alliances, to fund and legitimize new institutions of control, and to reward supporters. As in the realm of feasting, the Inkas drew on existing elements of Andean material culture and technology, elaborating their meanings to create symbols of imperial power and wealth. The rich cultural significance of cloth (Murra 1962) and the technological virtuosity expressed in metallurgy enhanced their value (Lechtman 1984), as did their exclusive association with the emperor.

The Inkas also recognized the symbolic importance of local cult objects. After conquering a province, the Inkas removed its most sacred religious symbol or icon to Cuzco, where it was effectively held hostage to minimize the chance of rebellion (Cobo 1956 [1653]: Vol. 3, Bk.12, Chap. XXII). Other local cult objects were brought to Cuzco for year-long visits, presumably to enhance their value through association with the Inka court (Rowe 1982). These coercive and highly symbolic acts expressed a hierarchical message that targeted local religious loyalties as a source of meaning that could be coopted and manipulated by the state to increase security.

At another level, materialization through objects was the primary means through which the Inkas negotiated relationships with local political leaders, whose authority now depended largely on their affiliation with the state. D'Altroy and Earle ([Chapters 8 and 9](#)) have argued that wealth finance supported this element of Inka strategy, describing the process through which the Inkas mobilized valuables for efficient transport, storage, and use as payment. While many of these wealth goods had intrinsic value deriving from their scarcity (as metals) or high labor input (as textiles), they were also imbued with additional value derived from the meaning they expressed in their exclusive association with the emperor. In a sense, through

materialization, the state increased the efficacy of its wealth production by closely (and exclusively) associating Inka ideology with these manufactured objects. For example, the *aclla* wove fine cloth and brewed *chicha* exclusively for the state; their activities linked the spheres of religious activity and economic production to enhance the meaning (and hence the value) of the finished goods (Chapter 8). The Inka nobility also monopolized gold and silver, so that goods containing these scarce metals were valued more highly for the same reasons.

Evidence from diverse areas of the empire suggests that materialization through symbols and insignia affected the economic policies of the Inkas, leading them to reorganize craft production and to intensify efforts to obtain exotic raw materials. The emperor Thupa 'Inka Yupanki resettled specialist producers of ceramics near Cajamarca (Espinoza Soriano 1970), and other enclaves of craft production were established near Cuzco to increase output (Murra and Morris 1976). As the conquests continued, the ranks of craft specialists and retainers expanded to include attendants and servants (*aqlla*, *yana*, and *mitmaq*) who were no longer simply corvée laborers but full-time attached specialists (Murra 1980 [1956]) who converted raw materials into materialized ideology.

The Inka reorganization of craft production reached far beyond Cuzco, to the Calchaquí Valley in Argentina, located about 1,500 km south of the Inka capital. In recent research there, conducted by the Proyecto Arqueológico Calchaquí (PAC), we have examined the nature of the Inka conquest and occupation of this region, known for its bronze artisans (the Santamariana culture) and rich ore deposits (Chapter 9; Gonzalez 1979; Pollard 1981, 1983). Under Inka rule, metal production in the Calchaquí was reorganized, presumably to produce finished metal goods for export to Cuzco. At Valdéz, a Santamariana residential center, PAC's excavations recovered ceramic molds, used for making copper ingots (Hagstrum 1992). In contrast, evidence for the *manufacture* of metal objects and ornaments made of mica, marine shell, and malachite was concentrated at the Inka center of Potrero de Payogasta. These data suggest that while the initial stages of metal production took place at Valdéz, the production of finished goods was closely supervised by Inka officials in an Inka facility. Because the actual finished objects were rare at Potrero, we infer that they were exported by the state. Potrero is ideally situated for transit, located along the Inka road at the northern entrance to the valley (DeMarrais 1993; Hyslop 1984).

The need for exotic and scarce materials, used in materialization, also led the Inkas to seek sources of raw materials through exchange with groups on the central and north coasts of Peru and Ecuador. Historic documents (Rostworowski 1970) and archaeological work (Morris 1988) suggest that

because Chincha traders could supply *Spondylus* shell and metals, the state rewarded them with gifts and built a center in the Chincha Valley, linked to Cuzco by an elaborate road. Further north, near Quito, Inka officials promoted the status of local lords who traded with tropical forest regions beyond the empire's frontier (Salomon 1987). Through these activities, the Inkas promoted the state's economic interests in these exchange relationships, many of which it could not directly control, but which were vital to materialization.

State Facilities and the Political Landscape. The Inkas materialized their presence throughout the empire through a landscape and architecture of power. Inka roads, settlements, and fortresses were the essential infrastructure for conquest and occupation in many parts of the empire (Gasparini and Margolies 1980; Hyslop 1990). At the same time, however, these elements of the landscape had enormous value as symbols. The roads especially symbolized the logistical strength and organizational power of the empire (Hyslop 1984). Corvee crews constructed over 23,000 km of roads with suspension bridges, causeways, and stairways across the steep Andean terrain. The roads linked the facilities of the empire together to form a coherent network of primary and secondary routes.

The roads and facilities represent an impressive and efficient organization. The Inkas preferred diplomacy to military engagement and combat, relying as much on the threat of force as on its implementation (D'Altroy 1992). Roads were a key means to materialize that threat. Capital investments in roads and facilities were costly, drawing energy and personnel away from subsistence production and substantially increasing the costs of occupation. At the same time, if a road through a region meant that military forces were readily mobilized in the event of an uprising, the chances of rebellion might be lessened. As visible reminders of Inka force, roads (as well as fortresses) enhanced the threat of military action at the same time that they served as basic elements of infrastructure.

The Inkas called their empire *Tawantinsuyu*, or "land of the four provinces," reflecting their view of its organization. Cuzco, the capital, was considered the navel (Garcilaso 1943 [1609], Pt.1, Bk.2, Chap. XI, 89-90). In its layout and organization, Cuzco was a physical representation, or microcosm of the empire (Hyslop 1990: 64). The *zeque* system, mentioned above, acted as a physical map of conceptual relationships, systematizing complex information about political organization, ceremonial sites, astronomy and sight lines, and features of the landscape (Zuidema 1964, 1982, 1983). Evidence even suggests that, in resettling groups near Cuzco, the Inkas arranged them so that Cuzco and its environs replicated in miniature version the spatial distribution of groups in the empire as a whole (Espinoza Soriano 1987: 320). Because the Inkas

regularly moved laborers, troops, and sometimes even whole ethnic groups great distances, material representations of space apparently played a key role in conceptualizing the physical geography of the empire.

Around Cuzco, the Inkas constructed walls and structures of cut-stone masonry of monumental proportions. Away from Cuzco, however, Inka *corvée* crews built relatively few *monuments* at a scale comparable to that of the enormous *huacas* of the southern Moche. Instead, *facilities*, including spaces and buildings for feasts, for administration, for housing troops and laborers, and for storage, made up most of the constructed landscape of the provinces. Some were temples, to facilitate religious worship. Other facilities materialized power. Inka rectangular layouts and building forms imparted a recognizable structure to sites in the hinterland (Gasparini and Margolies 1980; Hyslop 1990). Major state settlements were dominated by a large, often trapezoidal plaza, in which stood a ceremonial platform. Because the emperor stood upon this platform to address his subjects, it was a symbol, acting even in his frequent absences as a physical reminder of his central role in the proceedings. Usually adjacent to the plaza were the large rectangular *kallanka* and residential compounds, or *kancha*. Most probably, the uniform design of many state centers carried over to the practices associated with Inka feasts, so that these elements contributed to a common experience of Inka ritual throughout the empire.

As far south as the Calchaquí Valley, the layouts and architecture of state installations clearly mark them as Inka sites. Potrero de Payogasta (see [Fig. 9.3](#)), located on the Inka road about 20 km north of a cluster of Santamariana settlements, has a large, well-defined plaza with a central platform and associated *kallanka* and compounds. The elaboration of this sector suggests that Potrero was a setting for state-sponsored feasts (DeMarrais 1993). In the Calchaquí Valley, as in more central regions (Morris 1982), the Inkas appear to have separated local administrative facilities from state centers of hospitality, perhaps to emphasize the ritual character of feasts and the vertical hierarchy separating state from local authority. The site of Potrero de Payogasta, located in this distant region, has easily recognized Inka design features.

Summary. The Inka case illustrates the role of materialization in an expanding state, where ideology must be broadly communicated among an ethnically and linguistically diverse populace. In its manipulation of Andean tradition, Inka ideology could be understood by the vanquished at the community level, and also throughout the political hierarchy. It encouraged a sense of identity and cooperation in those from such different ethnic backgrounds. More generally, in a territorially extensive polity financed by taxation, an elaborated ideology becomes a significant source of power, encouraging and enforcing compliance.

Through materialization, the Inkas responded to local conditions, emphasizing a message of coercion in regions where resistance was strong, where vital resources were located, or that were strategically located. In these and other regions, coercion was balanced by reciprocity, as the state attempted to facilitate integration and to ease the imposition of *corvée* requirements. In its early stages, Inka expansion depended heavily upon military force, which necessitated costly investments in security, administration, and infrastructure (D'Altroy 1992; Luttwak 1976). Eventually, however, the Inkas secured a labor base in these regions to finance materialization and other projects. As the empire incorporated more distant provinces, feasting probably remained important, while reliance on client elites would have grown, increasing demand for state insignia and leading the state to intensify craft production to meet these obligations.

For the Inkas, materialization clearly meant massive costs on an ongoing basis. It seems reasonable to argue, however, that materialized ideology, exploited by the Inkas as a significant source of power, provided an overarching structure to state-subject relations that could be, and was, adapted to local conditions and changing imperial priorities. Because the state did not directly control productive lands in most areas, the vivid imagery of kingship and the reciprocal message of Inka ideology could, in their materialization, complement and balance the exercise of military power. Both sources of power contributed to achieving the coincident goals of integration, finance, and legitimization.

Conclusions

On the surface the three cases chosen for analysis seem diverse and divergent, each the result of adaptations to strikingly different environments. They vary as well in political scale and complexity, but we see that social power in each case depended upon the strategic allocation of resources to consolidate leadership and to support new institutions of control. In each case, the sources of power varied, so that hierarchical control emerged as a result of interdependent decisions. Each of these societies was characterized by competition, resistance, and a tendency to fragment into smaller political units. We argue that ideology, created through materialization, was one mechanism to stabilize power relations and to help counteract fragmentation. Materialization was used strategically in these cases and others like the Hawaiian chiefdoms (Chapter 7). The media of materialization differed certainly, but in each case emphasized monuments and inalienable objects that

could be controlled in their manufacture and distribution.

The ideologies of ruling segments are by nature ambivalent and contradictory, promoting a sense of community and common identity while they justify social differences and unequal access to wealth and authority. The materialization of ideology invests social capital, usually labor, to achieve specific objectives that often are contained in the messages of the ideology. For example, materialization activities can help to create solidarity, social cohesion, or group identity, while they legitimize leadership and demonstrate the basic coercive nature of its authority. The different *means* of materialization accomplish varying political objectives, including unifying or assembling groups (events), rewarding loyal followers (symbolic objects), perpetuating images of corporate power or chiefly control (monuments), or spreading a message or propaganda (texts). Importantly, the resources allocated to materialization are being diverted from other economic activities essential to the welfare of a polity, including subsistence production, so that the choice of materialization activities is also influenced by economic conditions and the nature of the challenges to authority, whether from internal or external sources, that are faced by the ruling segment.

In the Danish case, the effectiveness of ideology was tied to its message, as, over time, symbols of prowess in warfare became markers of successful chiefs. However, from the perspective of materialization, we see that chiefs could not exert exclusive control over the ideology until they controlled the technology of metal production and the exchanges through which metal swords and daggers were obtained. Thus, while the message of ideology is important, it is crucial to understand the linkages between ideology and other systems of control (over labor, raw materials, exchange) to see how materialization permits a chief to consolidate and institutionalize power.

A complex system of iconography sustained the Moche ruling elite. As was seen in the Danish case, burials of elites expressed individual status. Moche elites fulfilled ceremonial roles in life, had access to the finest ceramics, and were honored after death with rich burials that perpetuated their images. The highly elaborate ceremonial artifacts recovered from the burials of the Moche's "living gods" strictly limited ritual performances to those who controlled the requisite metal and textile elements of the ceremonial attire. Iconography, as materialized ideology, strengthened horizontal ties between elites, creating a pan-Moche culture, at the same time that it reinforced vertical relations by carefully assigning roles to participants in Moche ritual.

The Inka case illustrates the use of diverse materialization strategies to secure a remarkably heterogeneous population under imperial rule. Inka feasts created cohesion and integration, reinforcing messages about reciprocal obligations between the state and its subjects, although these tributary

relations were in fact coercive and largely asymmetrical. At the same time, in Cuzco, festivals and ritual events materialized the wealth and power surrounding the emperor effusively, making a challenge to Inka authority seem a daunting prospect. In the Inka economy, close control of attached specialists meant that state symbols had value both as scarce objects and as signifiers of exclusive association with the divine world of the emperor. The Inka infrastructure served multiple symbolic and functional roles to materialize the Inka's activities in all its provinces.

Materialization depends upon a society's economic base, but, as an active element in the process of building and consolidating political power, it also can be a cause of significant change. By exercising control of bronze swords, Danish chiefs were able to centralize and consolidate their power for the first time, but in doing this, they became dependent upon exchange networks for continuing access to bronze. Moche elites successfully materialized a ritual world of privilege; once established, the institutions of ceremony became the primary basis of legitimacy and authority in Moche society. The Inka empire incurred huge costs to sponsor ritual feasts to legitimize demands for subjects' labor service. Moreover, ongoing Inka efforts to centralize and intensify craft production, as well as to control external exchange relationships, suggest that the institutions of Inka ideology, while central to administration of the vast empire, entailed continuing steep maintenance expenditures.

Ideology is a significant source of social power in human societies. Because multiple ideas and beliefs exist in any society, a ruling segment must control the ideology—shared ideas, beliefs, and their representations—that legitimizes its position and authority. Through the process of materialization, an ideology is given concrete, physical form, through events, symbolic objects, monuments, and writing systems. Materialization is, therefore, an active process, instrumental to institutionalize and extend an ideology of domination. The costs of materializing ideology restrict access to this source of power, so that through control of key resources a ruling segment may be able to restrict the contexts of use and transmission of ideas and symbols. The specific means and forms of materialization chosen by elites depend closely upon their goals and resources. These choices in turn affect the success of the ideology in achieving integration, overcoming opposition, or consolidating political power. As a social process, materialization is a means through which symbols, their meanings, and beliefs can be manipulated to become an important source of social power in human societies.

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Notes

Chapter 1 Political Economies of Chiefdoms and Agrarian States

¹ I do not consider the division between traditional and modern economies to represent a complete transformation, but I make the division to ease my job and build on my own knowledge of traditional economies as seen archaeologically.

Chapter 5 Prehistoric Irrigation in the Hawaiian Islands

- ¹ In some areas, such as the Kona coast of Hawai'i (Newman 1970; Ellis 1963 [1827]), intensive dryland farming of taro, sweet potato, and additional crops also permitted population densities and surplus production comparable to irrigated farming. Such areas were developed with extensive terrace complexes and apparently used a short fallow cycle.
- ² Specific communities for which detailed archaeological data on subsistence practices are available include Lapakahi, Hawai'i (Newman 1970; Rosendahl 1971), Makaha, O'ahu (R. Green 1969, 1970, 1980; Hommon 1970, 1972; Yen et al. 1972), Kahana, O'ahu (Hommon and Barrera, 1971), Halawa, Moloka'i (Riley 1973, 1975; Kirch and Kelly 1975), Halelea District, Kaua'i (Earle 1973, 1978), and the Kohala-Hamakua coastal valleys, Hawai'i (Tuggle and Tomonari-Tuggle 1980).
- ³ Riley (1975: Table 26) lists seven "terrace complexes" (Nos. 1–7) with permanent water sources, but, because two of these complexes (Nos. 1 and 2) have two separate irrigation ditches each, they are considered to represent four irrigation systems.
- ⁴ This figure is calculated by multiplying the number of terraces receiving water from springs or the main stream (Hommon 1970: Table 2) by the average size of the terraces (146 m²) measured on these systems (Hommon 1970: Table 3). The average size of systems is calculated in the same way.
- ⁵ In the five areas with detailed archaeological and historic research, only one example of an irrigation system that crossed *ahupua'a* boundaries was noted. This system, however, was located in an area of the Hanalei Bay where extensive early plantation agriculture was found and it is likely that this system was extended during the historic period (Earle 1978: 127–128).
- ⁶ Of course, factors other than construction cost would have been important for deciding in what areas to develop irrigation systems. The bottomlands have the advantages of fertile alluvial soils and proximity to important marine resources. Alternatively, however, the floodplain systems are susceptible to disastrous floods and have problems with waterlogging (Earle 1978: 73–74, 139–140). To some degree, interior systems might have been a hedge against such problems.

Chapter 9 Wealth Finance in the Inka Empire

- 1 Elizabeth DeMarrais (personal communication, 2001) notes: "Regarding the molds, we have a lot of these in Cachi Adentro in pre-Inka period contexts; might some of the Valdéz molds come from contexts that pre-date the Inka?" Yes, although many contexts at Valdéz are associated with Inka ceramics, some may well be pre-Inka in date. DeMarrais's comment underscores the point that the metallurgical technology being used during imperial times was pre-Inka in derivation and was used by the Inka to generate an extractable wealth.

Chapter 12 The Bronze Age Economy of Thy

- 1 The methodology for plant recovery was comparable to that developed by Christine Hastorf (1993) in the Andes (Chapter 11); she was a consultant on the TAP project and helped Christina Kelertas establish the sampling, recovery, and analytical techniques for botanical remains.
- 2 Bjerre site 6 is considered to be a warrior house based on its intermediate size (25 m long and 8 m wide) and associated metal objects, including a sword belt button and a fibula. Since the house was built in two stages, at the beginning it may not have been the house of a distinguished person.
- 3 The shift to emphasize female status may fit a more general pattern described for societies in which males are involved in external warfare of raiding and warrior service. For the Viking, female status reflected their position as managers of the farms during the absence of their raider husbands (Hedeager 1994). Cross-culturally, matrilineal inheritance of chiefly office is associated with external warfare and the periodic absence of males as raiders (Keegan and MacLachlan 1989). With absent males, women become more responsible for general economic decisions and paternity becomes more difficult to guarantee.

Chapter 14 Ideology, Materialization, and Power Strategies

- 1 *Materialization* is distinct from the concept of *objectification*, articulated by Marx (1844). For Marx, the objectification of labor was the worker's input of labor to create the material product. Under the capitalist system, this objectification of labor alienated the worker from the products of his or her labor (see also McGuire 1992: 102–106). In choosing the term materialization, we stress the evolutionary process through which the world is organized and given meaning by social action to create material objects oriented toward specific goals. In our view, this process has ongoing effects, both positive and negative, at all levels of social organization, affecting the members of a society in different ways at different times throughout a historical sequence.
- 2 Only one comparable structure can be found in the northern Moche territory, the Late Moche pyramid of Huaca Grande, in the Pampa Grande complex of the Lambayeque Valley (Haas 1985). Debate continues as to whether this structure represents the expansion of the southern Moche and the consequent relocation of the capital in this northerly site (Moseley 1992; Castillo and Donnan 1994). In any case, Huaca Grande is an extremely late phenomenon, constructed with a peculiar technique not seen in the massive pyramids built in this region during the Lambayeque Period, and it is therefore not comparable to any previous structure in the northern Moche territory.

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Index

- Adaptationalist model, [137–144](#), [235–236](#), [252](#)
- Administered trade, [246–247](#)
- Adzes, Hawaiian, [131–132](#), [139](#)
- Africa, [53](#), [175](#), [199–201](#), [232](#), [323](#); Egypt, [82](#), [201](#); Ghana, [201](#); Kung of, [326](#); Tiv people of, [12](#)
- Age of Early Farmers, [331–337](#), [341](#), [344–346](#), [360–362](#)
- Age of Hill Forts, [332](#), [335](#), [342–343](#)
- Age of Stonehenge, [331–332](#), [334–339](#), [341–346](#), [360](#)
- Ahupua'a, [85–91](#), [93](#), [101–102](#); and irrigation, [108](#), [110](#), [113–114](#), [118](#); and pondfield terraces, [118](#)
- Allen, Jane, [124–125](#)
- Alva, Walter, [370](#)
- Amazonia, [47](#), [62](#)
- Amazon River, [47](#)
- American Bottoms, [59–60](#)
- Ancestor worship, [378](#)
- Andean chiefdoms, [8](#), [17](#), [181–284](#); and ceremonial events, [376–378](#); and Danish chiefdoms, [296](#); and exchange and social stratification, [235–254](#); as an expansionist empire, [375–376](#); and feasting, [277–281](#); and the Formative Period, [52–53](#), [79](#); and the Great Transformation, [16](#); and Hawaiian chiefdoms, [127–161](#); and the materialization of ideology, [358](#); and mobilization, [193](#), [198–199](#), [243–244](#); and prestige-goods exchange, [217–218](#), [246–247](#); and primitive valuables, [41–42](#); and redistribution, [198](#); and the role cloth and metal, [154–160](#); and specialization, [127–161](#); and staple finance, [191–215](#); and state facilities, [380–382](#); and state storage, [191–215](#), [276–277](#); and symbolic objects, [378–380](#); and warfare, [217](#), [202](#), [235](#), [242–243](#); and wealth finance, [191–234](#); and wealth use and production, [220–229](#)
- Annexation Period, [79](#)
- Annual Review of Anthropology, [328](#)
- Anthropogenic changes, to the environment, [297–299](#)
- Appadurai, Arjun, [41](#)
- Appalachia, [128](#)
- Architecture. See [Monuments](#)
- Argentina, [209](#), [216–234](#), [375](#). See also [Calchaquí Valley](#)
- Argonauts of the Western Pacific (Malinowski), [1–2](#)
- Aristocracy, [56](#), [64–65](#), [84](#)
- Asiatic Mode of Production, [6](#)
- Attached specialists, [129](#)
- Aulick, J. H., [152](#)
- Avebury, [339](#), [342–343](#)
- Avon, [331](#)
- Ayachucho Province, [186](#)
- Ayllu community, [376](#)
- Aztec, [149](#), [176](#); and the legitimation of power, [257](#); and wealth finance, [193–194](#), [212–213](#), [208–209](#); storehouses, [202](#)
- Babylonia, [82](#), [201](#)
- Bad Year Economics (Halstead and O'shea), [95](#)
- Barter exchanges, [36](#)
- Basin of Mexico, [174](#)
- Bech, Jens Henrik, [288](#), [314–315](#)
- Beku, [33](#)
- Bell Beaker Culture, [66](#), [289](#), [296](#), [302–304](#), [313–314](#), [362](#), [366](#)
- Bennett, Wendell C., [116](#) Beowulf, [287–288](#)
- Beyond Chiefdoms: Pathways to Complexity in Africa (McIntosh), [69](#)

Big Man systems, 28–33, 35–39; and Danish chiefdoms, 313, 316–317, 360; Ford on, 49; and long-distance exchanges, 316; and the Miskito, 47; Terrell on, 46; and the Tsembaga, 24

Bishop, C., 248

Bishop Museum, 153

Bjergene, 313

Bjerre, 305–310, 317–318, 320

Blanton, Richard, 69

Boas, Franz, 4, 6, 163, 326

Bolivia, 148, 221, 270

Boserup, Ester, 125

Bourdieu, P., 13

Bournemouth, 333

Bradley, Richard, 295, 331, 333, 334

Braun, David, 166

Bridewealth payments, 24–26, 29. See also [Marriage](#)

Brigham, W., 152, 153

British Isles, 50, 65–66, 289. See also [England](#); [Wessex](#)

Bronze Age. See [Early Bronze Age](#); [Late Bronze Age](#)

Buck, Peter H., 169

Bulbjerg, 322

Burgess, Colin, 331

Burials, 51, 53, 66, 176–178; and Danish chiefdoms, 290, 293, 314–315, 332–345, 338–343, 360–371; and the Hawaiian Islands, 79–80; and the Inka Empire, 221–223, 276; and social stratification, 56–57

Burton, R., 39

Byny, Fredrick, 152

Cajamarca, 379

Calchaquí Valley, 209, 216–234, 380, 382. See also [Argentina](#)

California Chumash, 68

Calusa, 68

Campbell, Shirley, 41

Capital, as a factor of production, 10–11

Capitalism, 7–8, 13–16

Caribbean, 47, 62

Carneiro, Robert, 47, 59, 62

Cashdan, Elizabeth, 327

Castillo, Luis Jaime, 348–385

Causeway camps, 50

Celtic Europe, 51, 68, 310

Ceremonial events, 353–354, 368–371, 376–378; Kaiko ceremony, 25; Moka ceremony, 28, 29–31, 362; Sacrifice Ceremony, 369–371; Tee ceremony, 28, 29

Chaco Canyon, 50, 68

Chalcatzingo, 175, 176–179

Chavez Pass, 50

Chavin cultures, 53, 66, 162

Cherry, J., 40, 295

Chetro Ketl, 50

Chicama Valley, 367

Chicha, 197, 246, 377, 379

Chiefdoms: in archaeological and ethnohistorical perspective, 43–69; basic description of, 15–16, 43–69; and centrality of decisionmaking and coordination, 55–56; and changing patterns of consumption, 255–283; and colonization, 51, 61, 78–79, 131; complex, 81–96, 162–180; and control of the economy, 60–64, 204; and corporate strategies, 17, 69, 144–145; as a "dirty word," 44; economic bases of, 48–65; as evolutionary types, 43–45; and iconography, 51, 64, 162–180, 254–256; ideological bases of, 65–67; important area studies for, 45–57; and managerial theory, 58–60; as the precursors to states, 51–53; and scales of integration, 54–55; style and iconography as legitimation in, 162–180; and the synthesis

of economic base, 64–65; theocratic, 52, 65–66; transition from, to state-level societies, 357–358. See also specific cultures

Chiefdoms: Power, Economy, and Ideology (Eafle), 68

Childe, V. Gordon, 192, 294, 311

Chillón Valley, 198

Chimú, 271, 375

Chincha Valley, 211

Chinese craftsmen, 176

Christ, 76

Chucchus, 134

Chucuito, 198, 211

Cieza de León, Pedro de, 159, 206

Cleghorn, P. L., 96

Cloaks, feathered, 150–154, 169–173, 179, 212

Cochabamba Valley, 148

Coe, M., 173, 176

Cohen, Abner, 45, 65

Collier, George, 327

Colombia, 166

Colonization, 51, 61; and specialization, 131; and the Hawaiian Islands, 78–79, 131

Commercial development model, of specialization, 130–137

Commodities, 14, 40–41, 236–252

Comparative Advantage, law of, 3

Compartmentalization, horizontal, 194–195

Competition, 60

Conkey, Margaret, 164–165

Consolidation Period, 79, 80

Constantinople, 285

Consumption, changing patterns of, 255–283

Control, of the economy, 60–64, 204

Cook, James, 74–77, 80, 150–152, 171–172

Coordination, centrality of, 55–56

Copenhagen, 293

Copper Age, 51, 61, 294

Corallian, 333

Cordy, Ross, 56

Corporate strategies, 17, 69, 144–145

Costin, Cathy Lynne, 242, 248, 255–283

Cranborne Chase, 331

CRM (Cultural Resource Management) projects, 75

Cult, use of the term, 168

Cultural ecology, 5–6, 18; and Danish chiefdoms, 296; and the Inka Empire, 236; of primitive valuables, 19–42; and specialization, 137

Cultural relativism, 4–6

Cummins, Tom, 171–172

Cunliffe, Barry, 331

Currency, 21–23, 39. See also Primitive valuables Cuzco, 146, 156–159, 194, 197, 251; Inka siege at, 202; and the materialization of ideology, 357, 377–381, 384; and state storage, 202, 204–207, 218; and wealth finance, 212

Dagger Period, 288–289, 297, 302, 362

Dalton, George, 25

D'Altroy, Terence N., 185, 191, 248, 340, 379

Dams, 115–116

Danish chiefdoms, 8, 15–18, 285–324, 359–360; and anthropogenic changes to the environment, 297–299; Archaeological Project (TAP), 288, 293, 298–300, 314, 359, 363–364; changing economy of prehistoric,

296–299; changing political dynamics of, 288; Early Bronze Age chiefdoms in, 363–366; early farmers of, 360–361; Funnel Beaker Culture, 297, 313, 353, 366; and grave goods, 50; and the Great Transformation, 15–16; pastoral warriors in, 361–363; political economy in, 312–322; and population growth, 297–299; and power strategies, 17–18; and primitive valuables, 41; and specialization, 132, 137; and subsistence economy, 299–312, 323–324

Dark Ages, 51

Dartmoor, 55

Darwin, Charles, 8

Decisionmaking, centrality of, 56

Deetz, James, 163

DeMarrais, Elizabeth, 348–385

DeNiro, Michael, 264

Denmark. See [Danish chiefdoms](#)

Distribution, as a fundamental factor of any economy, 11; of irrigation systems, 99–114. See also [Redistribution](#)

Ditch networks, 10, 116–117

DMP (Domestic Mode of Production), 1, 5, 9, 145; and Danish chiefdoms, 299, 312; and the Hawaiian Islands, 82, 95, 127, 145; and the Inka Empire, 236, 239; and redistribution, 82; and specialization, contrast between, 127

Donnan, Christopher B., 367, 370

Dorset Cursus, 336–338, 345

Dorset Ridgeway, 331, 341

Drennan, R. D., 54

Drucker, P., 174

Durkheim, Emile, 13, 84

Durrington Walls, 341

Dye, Tom, 78

Early Bronze Age, 16, 289–293, 298, 305–309, 314–318; bronze making in, 316; and the chiefdoms of Wessex, 331, 333; and the materialization of ideology, 360, 363–366; and primitive valuables, 41; settlements, 290, 298–302, 310–320; social organization of, 289–290; stability during, 292

Early Farmers, 331–337, 341, 344–346, 360–362

Early Intermediate Period, 186, 189

Early Iron Age, 310–311

Early Neolithic Age, 50, 297; and the chiefdoms of Wessex, 331, 333; and Danish chiefdoms, 299, 344; and the materialization of ideology, 359–360

EBA (Early Bronze Age settlements), 290, 298–302, 310–320. See also [Early Bronze Age](#)

Ecology, cultural, 5–6, 18; and Danish chiefdoms, 296; and the Inka Empire, 236; of primitive valuables, 19–42; and specialization, 137

Economic Anthropology (Herskovits), 2–3

Economic bases, synthesis of, 64–65

Economic specialization: adaptationalist model of, 137–144; causes of, 129–160; commercial development model of, 130–137; and Danish chiefdoms, 304, 309, 315–316; and the Hawaiian Islands, 91–92, 93, 127–161; and the Inka Empire, 127–161, 195; political model of, 144–145; progressive, 13; and redistribution, 84; and staple finance, 145–150

Economies: control of, 60–64, 204; definition of, 8–13; instituted, anthropology of, brief history of, 1–8; positive feedback, 101

Ecuador, 210–213, 217, 375

Egypt, 82, 201

Engels, Friedrich, 326

England, 319–320, 328. See also [British Isles](#)

Environment, anthropogenic changes to, 297–299

Evans, J. D., 334

Evans-Pritchard, E. E., 53

Evolution of Political Systems, The (Upham), 68

Ewa, 104–105

Exchange: means of, basic description of, [21](#); prehistoric, extent and character of, [252–254](#); Polanyi on, [11–12](#); prestige-goods, [47](#), [217–218](#), [246–247](#), [294–295](#), [323–324](#); valuables, [20–23](#). See also Primitive valuables

Family level, of political integration, [15](#)

Feasting, [277–281](#)

Feathered cloaks, [150–154](#), [169–173](#), [179](#), [212](#)

Feil, D. K., [40](#)

Feinman, Gary, [44](#), [54](#), [64](#), [68](#), [230](#)

Feudal Europe, [82](#), [149–150](#)

Flannery, Kent, [175](#)

Fleming, Andrew, [331](#), [340](#)

Foods, access to preferred, [261–265](#)

Ford, Richard, [49](#)

Formalism, [2–3](#), [236](#)

Formative Period, [52–53](#), [79](#), [186](#), [329](#)

Fortes, M., [53](#)

Foundations of Social Inequality (Price and Feinman), [68](#)

Fried, Morton H., [326](#)

Friedman, Jonathan, [6](#), [47](#), [62](#), [254](#), [294–295](#)

Functionalism, [6](#)

Funnel Beaker Culture, [297](#), [313](#), [353](#), [366](#)

Gall, Patricia, [94](#)

Gateway communities, [63](#)

Germanic Mode of Production, [296](#)

Ghana, [201](#)

Gilman, Antonio, [63](#)

Gimwali, [36](#)

Goods: access to preferred and high-value, [261–281](#); prestige-, exchange of, [44](#), [217–218](#), [246–247](#), [294–295](#), [323–324](#)

Great Transformation, [13–16](#)

Great Transformation, The (Polanyi), [13–14](#)

Green, R., [330](#)

Guatemala, [174](#), [178](#)

Guerrero, [174](#), [176](#)

Gulf of Nicoya, [47](#)

Gwembe Tonga, [199–200](#)

Habitus, [13](#)

Hagstrum, Melissa, [247](#)

Halawa Valley, [108](#), [110](#), [330](#)

Halelea District, [75](#), [86–87](#), [104–105](#), [115–119](#), [121–123](#)

Halperin, Rhoda, [95](#), [128](#)

Halstead, Paul, [95](#)

Hambleton Hill, [336](#), [338](#)

Hampshire, [334](#)

Hanalei, [99](#), [104–6](#)

Handy, E. S. C., [90](#), [102](#)

Harland-Phase Caddon, [48](#)

Hastorf, Christine, [185](#), [264](#), [265](#)

Hatun Xauxa, [158](#), [189](#), [205–207](#), [219](#), [246](#), [249](#), [256](#), [280](#)

Hatunmarca, [135–136](#), [141](#), [187–189](#), [221](#), [242](#)

Hawai'i, [73](#), [75](#), [79](#); and ahupua'a, [85–91](#); and irrigation, [106](#), [111–113](#); and specialization, [132](#); and storage, [191–215](#), [276–277](#); and style and iconography, [168](#), [170–171](#); and wealth finance, [191–234](#). See also [Hawaiian Islands](#)

Hawaiian Islands, [8](#), [71–182](#); and community social organization, [89–91](#); and Danish chiefdoms, [296](#), [328](#); and economic specialization, [91–92](#), [93](#); feathered cloaks used in, [150–154](#), [169–173](#), [179](#), [212](#); and the

Great Transformation, 16; and hydraulic theory, 59; and the Inka Empire, 127–161; and power strategies, 17; prehistoric irrigation in, 59, 97–126; and primitive valuables, 41–42; and property rights, 328–331; recent work on, 95–96, 124–125; and social stratification, 57; and staple finance, 201–202; and storage, 191–215, 276–277; and style and iconography, 168–173, 179, 180; and the theocratic nature of chiefdoms, 65–66; and wealth finance, 194. See also specific islands

Hay den, Brian, 40–41

Hedeager, Lotte, 288

Hegemony, 246, 256

Heiau, 328–330

Heizer, R., 174

Helms, Mary, 65

Herskovits, Melville, 2, 20

Heterarchical structure, 69

Hierarchical structure, 69, 84, 382

Highland Core, 27–31

Hill Forts, Age of, 332, 335, 342–343

Hodder, Ian, 163

Hohokam, 68

Hole, Frank, 53

Homicide compensation, 29

Hopewellian period, 48

Hopi, 201

Horizontal compartmentalization, 194–195

Houart, G., 48

Householding, concept of, 5, 82

How Chiefs Come to Power (Earle), 68

Hrothgar, 287

Huacas del Sol, 373

Huallaga Valley, 147

Huancas de la Cruz, 134

Huancavalica, 250

Huá nuco Pampa, 228, 246, 256, 280, 376–377

Hydrology, 59, 102–103

Hyslop, John, 182

Iberian chiefdoms, 63, 294

Iberian Copper Age, 294

lea Valley, 211

Iceland, 63, 288

Iconography, 51, 64, 162–180, 254–256

Ideology, 18, 65–67, 348–385; and ceremonial events, 353–354, 368–371, 376–378; Marx on, 4–5; and monuments, 356–357, 373–374; and social stratification, 57; and style and iconography, 163–164, 175, 179, 180; and symbolic objects, 254–256, 371–373, 378–380; and the theocratic nature of chiefdoms, 65–66; and writing systems, 257–258

Independent specialists, 128–129

India, 358

Inka Empire, 17, 181–234; and ceremonial events, 376–378; as an expansionist empire, 375–376; and feasting, 277–281; and the Great Transformation, 16; and Hawaiian chiefdoms, 127–161; and the materialization of ideology, 358; and mobilization, 193, 198–199, 243–244; and prestige-goods exchange, 217–218, 246–247; and primitive valuables, 41–42; and redistribution, 198; and the role cloth and metal, 154–160; and specialization, 127–161; and staple finance, 191–215; and state facilities, 380–382; and state storage, 191–215, 276–277; and symbolic objects, 378–380; and warfare, 217, 202, 235, 242–243; and wealth finance, 191–234; and wealth use and production, 220–229

Institutional forms, redistribution as an analysis of, 82–84

Integration, scales of, 54–55

Iron Age, 51, 62, 175, 331–332, 342–343

Irrigation, [6,46](#); in the Andes, [53](#); complexity of, [119–120](#); construction techniques, [114–120](#); and dams, [115–116](#); and Danish chiefdoms, [295–296](#); development of, [120–123](#); and ditch networks, [10](#), [116–117](#);; in the Hawaiian Islands, [59](#), [97–126](#); major zones of, [103](#), [104–107](#); and pondfield terraces, [117–119](#); recent work on, [124–125](#); secondary zones of, [103](#), [107–111](#); scattered, [111–113](#); and specialization, [138](#); systems, distribution of, [99–114](#); systems, physical dimensions of, [114–120](#)

Isotopic analysis, [280](#)

Japan, [176](#)

Jauja, [183](#)

Johnson, Allen, [164](#), [326](#)

Jutland, [311](#), [316–319](#), [285](#)

Kaeppler, Adrienne, [171](#)

Kahana Valley, [108–110](#)

Kaiko ceremony, [25](#)

Kallanka, [382](#)

Kamakau, Samuel M., [168](#)

Kamehameha I, [150](#), [152–153](#), [204](#)

Kaminaljuyu, [52,62](#)

Kancha, [382](#)

Kapaukuans, [31](#)

Kapu, [168–169](#)

Kapu moe, [168–169](#)

Kaua'i, [71–75](#), [99–123](#), [170](#); and ahupua'a, [85–91](#), [93](#), [101–102](#), [108](#), [110](#), [113–114](#), [118](#); and economic specialization, [91–92](#); Halelea District of, [75](#), [86–87](#), [104–105](#), [115–119](#), [121–123](#); Napali Coast of, [107](#); Waimea, [74–75](#), [91](#). See also [Hawaiian Islands](#)

Kearny, L., [152](#)

Keda, [41](#)

Kelertas, Kristina, [299](#)

Kelly, Robert, [330](#)

Kinship systems, [47](#), [194–195](#), [241–242](#)

Kirch, Patrick, [124](#), [330](#)

Knap Hill, [338](#)

Knowlton Circles, [341](#)

Koa wood, [76](#)

Kohala District, [88–89](#), [123](#)

Kolb, Michael, [79](#), [338](#)

Kona, [88–89](#)

Konohiki, [100](#), [114–115](#)

Koolau District, [107](#)

Kotzebue, O. von, [98](#)

Kristiansen, Kristian, [288](#), [314–315](#), [344](#)

Kula, [2](#), [21](#), [32–36](#), [37–41](#), [63](#), [295](#)

!Kung, [326](#)

Kurtz, D. V., [257](#)

Kus, Susan, [351](#)

Labor: division of, and specialization, [127–128](#); as a factor of production, [10](#); and property rights, [325–326](#); and stores of value, [20](#); tax, [195–199](#)

Lake Iticaca, [155](#)

Lake Ove, [289](#)

Lana'i, [101](#). See also [Hawaiian Islands](#)

Land-scapes, role of, [356–357](#); tenure, changing patterns of, [344–346](#)

La Oroya, [247](#)

La Paya, [219–220](#), [222](#), [229](#)

Lass, Barbara, [96](#), [132](#)

Late Bronze Age, [318–323](#); and the chiefdoms of Wessex, [332](#); and Danish chiefdoms, [287](#), [290](#), [292](#), [295](#), [298](#); population growth during, [292](#); settlements, [290](#), [298](#), [310–312](#), [320](#), [322–323](#)

Late Intermediate Period, 263
 Late Horizon, 199, 221, 227, 251
 Late Neolithic Age, 50, 162, 287, 299–305; and the chiefdoms of Wessex, 331, 333; Dagger Period of, 288–289, 297, 302, 362; and
 Danish chiefdoms, 288–289, 298, 340–341, 334; and the materialization of ideology, 363
 Late Preceramic period, 53
 LBA (Late Bronze Age settlements), 298, 310–312, 320, 322–323. See also [Late Bronze Age](#)
 Lechtman, Heather, 158, 232–233
 Lee, William, 152
 Legitimacy, 150
 Leveling mechanisms, 82–83
 LeVine, Terry, 155
 Limfjord, 285, 301
 Linnekin, Jocelyn, 152
 Llamap Shillón, 187
 Local groups, of political integration, 15
 Lodbjerg, 304
 Los Millares, 294
 Lothrop, S. K., 157
 Luxury items, non-utilitarian, 271–275
 Mae Enga, 15, 27–31, 40–41
 Maiden Castle, 338
 Makaha Valley, 108–110
 Makahiki ceremonies, 66, 92–93, 329
 Malinowski, Bronislaw, 1–2, 4; and managerial theory, 59; plea of, for a comparative approach to human economies, 7; and primitive valuables, 31–32, 36, 39
 Malo, David, 151
 Mamo, 171
 Mana, 111, 168–169
 Managerial theories, 58–60, 64–65
 Mann, Michael, 348–349
 Mantaro Valley, 133–137, 183–189, 217–220; and the local procurement zone, 238–244; and the long-distance procurement zone, 249–252; metals recovered in, 209; nonutilitarian luxury items found in, 272–275; and the regional procurement zone, 245–248; and specialization, 140–141, 143, 148; storehouses in, 205–206; use of cloth and metal in, 155, 158
 Marca, 134, 188, 221
 Marlborough Downs, 331
 Marquesas, 201, 328
 Marriage, 24–26, 29, 82, 179
 Marx, Karl, 6, 294, 326. See also [Marxism](#)
 Marxism, 4–7, 130, 192. See also [Marx, Karl](#)
 Materialism, 6, 17–18, 64–65
 Materialization, 348–385; basic description of, 350–352; and case studies, 358–383; and ceremonial events, 353–354, 368–371, 376–378; means and forms of, 352–358; and monuments, 356–357, 373–374; and symbolic objects, 254–256, 371–373, 378–380; and writing systems, 257–258
 Matos, Ramiro, 185
 Maui, 73, 79–80, 329; and ahupua'a, 85–86; and irrigation, 99–100, 104, 106, 107–113
 Maumbury Rings, 339
 Mauna Kea, 96, 132
 Mayr, Ernst, 8
 Media of exchange, 22
 Megalithic Period, 66
 Meggitt, Mervin, 28
 Melanesia, 27, 46, 295, 313
 Melpa, 15, 27–31

Mesoamerica, 51–54, 174, 176–177, 179
 Mesopotamia, 53
 Metal, role of, 154–160, 294
 Mexico, 52, 173, 174, 208. See also [Olmec](#)
 Micronesia, 46, 60
 Middle East, 175. See also [Babylonia](#)
 Middle Neolithic Period, 50, 297, 313
 Miller, William, 152
 Millereia, 155
 Minimum number of individuals (MNI), 260
 Miskito, 47
 Missionaries, 97
 Mississippian Society, 48, 62–63, 66–68, 162
 Mitmaqkuna, 197
 MNI (minimum number of individuals), 260
 Mobilization, 62, 82–84, 93–94, 325–326; definition of, 83; and the Inka Empire, 193, 198–199, 243–244
 Moche, 16, 356–358, 367–375, 384–385
 Modes of production: Asiatic, 6; Germanic, 296; Oriental, 256. See also [DMP \(Domestic Mode of Production\)](#)
 Moka exchange ceremony, 28, 29–31, 362
 Moloka'i, 75, 86, 101, 106, 108, 111
 Money, 21–23, 28. See also Primitive valuables
 Montelius III, 290, 293
 Montelius II, 290, 293
 Monuments, 50, 335–343, 356–357, 373–374; and Danish chiefdoms, 336–345, 363–366; and the materialization of ideology, 381–382
 Morelos, 174, 175, 178
 Morris, Craig, 207, 246
 Moundville, 48
 Murra, John, 146, 159–160, 211, 233, 236
 Mwali, 33–35
 Napali Coast, 107
 National Museum (Copenhagen), 293
 Necropolis, 155
 Neitzel, J., 44, 54
 Neolithic Age, 1, 15–16, 50, 313–314; and the chiefdoms of Wessex, 331, 333; Dagger Period of, 288–289, 297, 302, 362; and
 Danish chiefdoms, 288–289, 298–299, 340–341, 334, 344; and the materialization of ideology, 359–360, 363.
 See also [Early Neolithic Age](#); [Late Neolithic Age](#); [Middle Neolithic Age](#)
 Netting, Robert, 53
 Networked strategies, 17, 69, 324
 Nevada Huaytapallana ice pack, 186
 New Archaeology, 6–7
 Newfoundland, 285
 New Guinea, 2, 327; Highland Core of, 27–31; Mae Enga of, 27–31, 40–41; Melpa of, 27–31; Moka exchange ceremony in, 28, 29–31, 362. See also [Trobriand Islanders](#)
 New Institutional Economists, 7
 New Stone Age, 1
 New World, 216, 373
 Nordyke, Eleanor, 77
 North, Douglass, 326
 North Sea, 285, 308
 Norwegian kings, 288
 O'ahu, 73, 75, 86, 329; and economic specialization, 91–92; and irrigation, 98–100, 107–111; Waikiki, 91, 99–100, 106. See also [Hawaiian Islands](#)

Oaxaca, 178, 230
 Objects, symbolic, 254–256, 362–363, 371–373, 378–380
 Oceania, 46–47
 Old World, 175
 Olmec culture, 16, 52, 56, 61, 66; and style and iconography, 162, 168, 173–180; and the theocratic nature of chiefdoms, 65–66
 Oral histories, 79
 Organic solidarity, use of the term, 84
 Oriental Mode of Production, 256
 Orinoco River, 47
 O'Shea, John, 95
 Otavalo, 210–211
 Owen, Bruce, 232–233, 264
 Ownership, 9–10, 41, 164, 305
 PAC (Proyecto Arquelológico Calchaquí), 219
 Pachamanca pits, 276
 Panama, 47, 63, 67, 166
 Parsons, Jeffrey, 183, 185
 Pastoral Warriors, 360, 361–363. See also [Warfare](#)
 Patankoto, 247
 Payment, means of, 20–21
 Pearl Harbor, 104
 Peer-polity interaction sphere, 40
 Peru; access to preferred and high-value goods in, 261–281; geography of, 181–183; late prehispanic, changing patterns of consumption in, 255–283; Moche of, 16, 356–358, 367–375, 384–385; and primitive valuables, 41–42; and settlement patterns, 4–5; and status distinction, 255–283; and style and iconography, 167; transition from chiefdoms to state-level societies in, 357–358. See also [Andean chiefdoms](#)
 Phratries, 28
 Pizarro, Hernando, 183
 Poi, 169
 Polanyi, Karl, 5, 13–14; concept of householding in, 95; definition of redistribution by, 11–12, 81–82; mechanisms for transaction in, 11–12; on staple finance, 201
 Political model, of specialization, 144–145
 Polynesia, 45–47, 61, 68
 Pomacancha, 140–41, 239–240, 245
 Pondfield terraces, 117–119
 Population data, 290–292, 297–299; and the Hawaiian Islands, 61, 73, 77, 78; and property rights, 332–335; and scales of integration, 54–55
 Portugal, 64
 Positive feedback economies, 101
 Potlatchina, 82
 Potrero de Payogasta, 216, 220, 222–229, 231–233, 280, 382
 Poverty Point, 49
 Powell, H. A., 31–32
 Power: four sources of, identified by Mann, 348–349; legitimation of, 255–283; and materialism, 17–18; pathways to, and primitive valuables, 42; strategies, 17, 348–385
 Pragmatism, 244
 Pre-Columbian civilizations, 162
 Prestige-goods exchange, 47, 217–218, 246–247, 294–295, 323–324
 Price, Barbara, 68, 174, 175
 Primitive valuables: characteristics and functions of, variations in, 36–40; ecology and politics of, 19–42; form and function of, variations in, 23–26; and the Mae Enga, 27–31, 40–41; and the Melpa, 27–31; and the Trobriand Islanders, 31–36; and the Tsembaga Maring, 23–27; typology of, 20–22; use of, 25–27, 29–30, 34–36

Production, modes of: Asiatic, 6; Germanic, 296; Oriental, 256. See also [DMP \(Domestic Mode of Production\)](#)

Property rights, 325–346; and the chiefdoms of Wessex, 331–346; and the Hawaiian Islands, 328–331; and land tenure, changing patterns of, 344–346; and monuments, 335–343; and settlement patterns, 335–343; and social

organization, 335–343

Puna District, 92, 107. See also [Puna grasslands](#)

Puna grasslands, 141, 147, 185. See also [Puna District](#)

Pyramids, 373

Qiché basin, 178

Quachtli cloth, 208–209

Quito, 198, 205, 210

Rappaport, Roy, 23–24, 31

Reciprocity, 11–12

Redistribution, 58–59, 61; as an analysis of institutional forms, 82–84; four part typology of, 82–83; and the Hawaiian Islands, 81–96; and the Inka Empire, 198; Polanyi on, 11–12, 81–82; reappraisal of, 81–96; and redistributive hierarchy, 84, 92–94

Relativism, 4–6

Renfrew, Colin, 40, 294, 148, 340

Ricardo's Law of Comparative Advantage, 3

Rights, property, 325–346; and the chiefdoms of Wessex, 331–346; and the Hawaiian Islands, 328–331; and land tenure, changing patterns of, 344–346; and monuments, 335–343; and settlement patterns, 335–343; and social organization, 335–343

Riley, Tom, 120–122

River Thames, 331

Roman Empire, 50, 51, 332

Roman Conquest, 332

Rostworowski, Maria, 211, 213

Rowlands, Mike, 62, 254, 288, 294–295

Royal Commission on Historic Monuments, 336

Russell, Glenn, 249, 281

Rybury, 338

Sacrifice Ceremony, 369–371

Sahlins, Marshall, 1, 5; analysis of Great Mahele by, 75; and economic specialization, 93; and heredity, 47; on productivity and sociopolitical complexity, 54; and stratification, 56

Salisbury Plain, 331

Salomon, Frank, 210, 219

Salta Province, 219

San José de Moro Archaeological Project, 367, 370–372

Sanders, William, 52, 174, 175

Santamariana chiefdoms, 219–220, 222

Saxe, A., 94

Scandinavia, 51, 66, 288. See also [Danish chiefdoms](#)

School of American Research Advanced Seminars, 325

Scott, Cathy, 185

Seltzer, Geoffrey, 186

Service, Elman, 45, 58, 81, 84–86, 236, 326

Settlement patterns, 4–5, 290, 298–302, 310–320, 335–343

Share-out, definition of, 82

Shennan, Steven, 66

Simbai Valley, 23–27

Single Grave Period, 297–298, 313–314, 362, 366

Smith, Adam, 3, 130

Social organization; community, and Hawaiian chiefdoms, 89–90; and property rights, 335–343

Social stratification, 56–57, 79, 235–254, 312

Society for Economic Anthropology, 3

Sociopolitical organization: of the Melpa and the Mae Enga, 27–31; of the Trobriand Islanders, 31–36; of the Tsembaga Maring, 23–27

Solidarity, organic, use of the term, 84

Somerset, 331

Soulava, 33–35

South America. See [Andean chiefdoms](#); [Inka Empire](#)

Southampton, 337

Southern Cult, 48

Spain, 64, 147; irrigation in, 295; and the Inka Empire, 157, 206; settlement of Los Millares in, 294

Specialization, economic: adaptationalist model of, 137–144; causes of, 129–160; commercial development model of, 130–137; and Danish chiefdoms, 304, 309, 315–316; and the Hawaiian Islands, 91–92, 93, 127–161; and the Inka Empire, 127–161, 195; political model of, 144–145; progressive, 13; and redistribution, 84; and staple finance, 145–150

Spiro-Phase Caddon, 48

Standardization, 129

Stannard, David, 77

Staple finance, 69, 192–194, 246; and the Inka Empire, 191–215, 217; specialization with, 145–150; and storage, in state political economies, 199–204

State(s): basic description of, 16; chiefdoms as the precursors to, 51–53; "city," 218; facilities, 380–382; and the Great Transformation, 15; and hydraulic theory, 59; level societies, transition from chiefdoms to, 357–358; political economy, staple finance and storage in the, 199–204; theocratic, 52, 65–66

Status-associated activities, differential participation in, 275–281; distinction, 255–283

Steinberg, John, 287, 291

Stevenson, R. F., 53

Steward, Julian, 192

Stone Age, 1

Stone Age Economics (Sahlin), 1

Stonehenge, 331–332, 334–339, 341–346, 360

Storage; and the Inka Empire, 191–215, 218, 204–207, 276–277; and managerial theory, 60; necessity of, 201–202; in the Upper Mantaro Valley, 204–207

Stores of value, definition of, 20

Stratification, social, 56–57, 79, 235–254, 312

Structural functionalism, 5

Structuralism, 2, 13

Structural Marxism, 4, 294–295. See also [Marxism](#)

Struever, Stuart, 48

Style: as legitimation, 162–180; two different meanings of the term, 162–163

Subsistence economy, 299–312, 323–324, 332–335

Substantivism, 2–7, 11–13, 236

Sumeria, 201

Sussex, 331

Tahiti, 171

TAP (Thy Archaeological Project), 288, 293, 298–300, 314, 359, 363–364

Tapa cloth, 74, 92, 93, 169

Tarma, 247, 271

Taro plantations, 97–98, 117–119

Taxation, 82, 192, 195–196, 211

Taylor, D., 53

Technologies, intersecting, concept of, 230

Tee exchange ceremony, 28, 29

Tehuacan Valley, 178

Terrell, John, 46

Test settlement, 331

Thames River Valley, 333, 346

Theocratic states, 52, 65–66
 Thiessen polygons, 54
 Thisted Museum, 288, 293, 313
 Thompson, John, 246, 349
 Thorpe, Nick, 288
 Thy, 293–324, 359–360; and anthropogenic changes to the environment, 297–299; Archaeological Project (TAP), 288, 293, 298–300, 314, 359, 363–364; changing economy of prehistoric, 296–299; changing political dynamics of, 288; Early Bronze Age chiefdoms in, 363–366; early farmers of, 360–361; Funnel Beaker Culture, 297, 313, 353, 366; pastoral warriors in, 361–363; political economy in, 312–322; and population growth, 297–299; and subsistence economy, 299–312, 323–324
 Tiv people, 12
 Tomonari-Tuggle, M. J., 112, 116, 123
 Trobriand Islanders, 2, 31–36, 62, 317, 327
 Tsembaga Maring, 15, 23–27, 327
 T-tests, 260–261
 Tuggle, David, 112, 116, 123
 Tunanmarca, 135–136, 187–188, 242, 259–260
 Twareg chiefs, 317
 UCLA (University of California, Los Angeles), 288
 UMARP (Upper Mantaro Archeological Research Project), 133–136, 182–185, 189, 206, 250, 257–258, 266
 Umpamalca, 135–135, 141, 242
 Unification Period, 79, 329
 University College, 288
 Upper Kennet, 331
 Upper Mantaro Valley, 181–186, 204–207, 281. See also [Mantaro Valley](#)
 Urigubu gifts, 34
 Utilitarian items, high-value, 265–271
 Utilitarianism, 235–236#
 Valdéz, 225–233, 380
 Valley of Mexico, 52, 208
 Valuables, primitive: characteristics and functions of, variations in, 36–40; ecology and politics of, 19–42; form and function of, variations in, 23–26; and the Mae Enga, 27–31, 40–41; and the Melpa, 27–31; and the Trobriand Islanders, 31–36; and the Tsembaga Maring, 23–27; typology of, 20–22; use of, 25–27, 29–30, 34–36
 Vancouver, George, 150, 152–153
 Veguwa, 33
 Vertical archipelago model, 236
 Vijayanagara empire, 358
 Vikings, 41, 285, 288
 Viru Valley, 6
 Visby, 314–315
 Wahgi River, 27
 Waikiki, 91, 99–100, 106
 Waimea, 74–75, 91
 Waioli, 106
 Waipa, 106
 Wanka, 8, 155, 187–188; and the advance of glaciers, 186; and changing patterns of consumption, 255–283; and differential participation in status-associated activities, 275–281; and the Great Transformation, 16; and high-value utilitarian items, 265–271; and the local procurement zone, 238–244; and the long-distance procurement zone, 249–252; and nonutilitarian luxury items, 271–275; and objects of wealth, 221–224; and power strategies, 17–18; and the regional procurement zone, 245–248; and social stratification, 235–254; and specialization, 133–137, 141–143, 147–148; and staple finance, 205; and status distinction, 255–283; and wealth finance, 212. See also [Inka Empire](#)
 Warfare: as a characteristic of chiefdoms, 59, 64; and Danish chiefdoms, 315; and the Hawaiian Islands, 329; and ideology, 67; and the Inka Empire, 217, 202, 235, 242–243. See also [Warrior elite](#)

Warrior elite, [64](#), [67](#), [146](#), [360–363](#). See also [Warfare](#)

Wealth: finance, [69](#), [191–234](#), [324](#); objects of, [221–222](#), [312](#); production of, [224–233](#); use of, [220–224](#). See also [Wealth finance](#)

Wealth of Nations (Smith), [3](#), [130](#)

Webster, David, [52,349](#)

Weiner, Annette, [13](#)

Wessex, [295](#), [318](#), [328](#), [331–346](#), [356](#). See also [British Isles](#)

White, Leslie, [192](#)

Whitesheet, [338](#)

Whitney, Samuel, [152](#)

Willey, Gordon, [162](#)

Wiltshire, [334](#)

Windmill Hill, [335](#), [338](#)

World War I, [2](#)

World War II, [4](#)

Wright, Herbert, [53](#), [186](#)

Xauxa, [183](#)

Yanamarca Valley, [187](#), [189](#), [242](#), [245](#), [247–251](#), [273](#)

Yengoyan, A., [166](#)

Zeque system, [357](#), [381](#)

Zimbabwe, [199](#). See also [Gwembe Tonga](#)

Zuni, [201](#)